

Disaster Governance: Experience of Sidr 2007 in Mirjagong Upazila

A dissertation

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V

Abstract

In recent years, people around the world have become increasingly alarmed by disasters and natural calamities such as earthquakes, floods, cyclones, windstorms, landslides, droughts, volcanic eruptions, and the like. Recent earth quake in China, cyclone *Sidr* and flood in Bangladesh, and cyclone *Nargis* in Myanmar are among the few examples which has resulted in great losses and the tragedies that are still fresh in our memories. Bangladesh is a disaster prone country and almost every year the country faces some sort of natural catastrophes. Bearing the risk of disaster is almost inevitable to its population. After the devastating super cyclone Sidr on 15 November 2007, there was a clear indication of lack of coordination in relief distribution. Experience suggests that many cyclone affected people living in and around Upazila headquarters received more relief materials, while people staying on the outlying areas were starving. Following SIDR, many relief workers distributed relief materials by their own considerations and they have had least coordination with Relief Ministry and Disaster Management Bureau (DMB) and district and Upazila relief office. Of late, however, discussing the coordination problem the government urged all to operate relief activities in coordination with the local administration for proper distribution of relief materials. It was observed by many participants, who had visited the cyclone hit areas and took part in the relief operation, that the relief materials were being distributed haphazardly due to lack of coordination. The present thesis argues that integrated approach of disaster management can help minimize the loss of lives and property during natural calamities and utilize resources to mitigate the post disaster situation in effective manner. It would also underline the need for an integrated disaster management center in all the Upazila headquarters of the coastal districts.

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List of abbreviations

- ❖ ADB- Asian Development Bank
- ❖ ADRC- Asian Disaster Reduction Center.
- ❖ IDNDR- International Decade for Natural Disaster Reduction
- ❖ DMB- Disaster Management Bureau
- ❖ UN-United Nations
- ❖ MoFDM- Ministry of Food and Disaster Management
- ❖ BMD- Bangladesh Meteorological Department
- ❖ FFWC- Flood Forecasting and Warning Center
- ❖ FFW- Food for Works
- ❖ Cpp- Cyclone Preparedness Program
- ❖ SPARSO- Space Research and Remote Sensing Organization
- ❖ CEGIS-Center for Environment and Geological Information System
- ❖ WARPO –Water Resources Planning Organization
- ❖ IWM –Institute of Water Modeling
- ❖ BUET-Bangladesh University of Engineering and Technology
- ❖ SOD- Standing Order on Disaster
- ❖ DMCs – Disaster Management Committees
- ❖ DRRO- District Relief and Rehabilitation Officer
- ❖ NDMC- National Disaster Management Council
- ❖ IMDMCC- Inter Ministerial Disaster Management Coordination Committee
- ❖ CPPIB- Cyclone Preparedness Program Implementation Board
- ❖ NDMAC- National Disaster Management Advisory Committee
- ❖ DMTPABTF- Disaster Management Training and Public Awareness Building Task Force
- ❖ NGOs – Non Governmental Organizations

- ❖ FPOCG- Focal Point Operation Coordination Group
- ❖ NGOCC- NGO Coordination Committee
- ❖ CSDDWS- Committee for Speedy Dissemination of Disaster Related Warning /Signals
- ❖ DDMG- District Disaster Management Committee
- ❖ UNO- Upazila Nirbahi Officer
- ❖ UDMC- Union Disaster Management Committee
- ❖ UPL- University Press Limited
- ❖ PDMC- Pourashava Disaster Management Committee
- ❖ CCDMC- City Corporation Disaster Management Committee
- ❖ MDGS- Millennium Development Goals
- ❖ PRSP- Poverty Reduction Strategy Paper
- ❖ UP- Union Parishad

Chapter 1

Introduction

Bangladesh is one of the most vulnerable disaster prone countries in the world and that requires the country to have considerable strengthening of her disaster management. The geography of the country not only gives a favorable monsoon, but also causes the catastrophic devastations of cyclone, nor'easter tornado and flood. Since Bangladesh is a low lying country, floods and cyclones of various magnitudes, riverbank erosions occur almost every year causing extensive damage to her life and property. Disasters occur frequently and in such magnitude in Bangladesh that they multiply the problem of poverty and seriously challenge the effort of the country towards self reliance. Disaster hampers much of its development activities every year. In view of the seriousness of the disaster risk, there exists a crying need for research work on disaster management to find out efficient and effective systems for coping with the situation arising out of the natural disasters. It is also felt that a comprehensive disaster management system should be adopted for preparation/mitigation/ prevention of the disaster impacts. The thesis argues that an integrated disaster management or one-way disaster management headed by government machinery having help from all quarters can ensure better results.

1.1 Literature review

Disaster management is a vast subject. It encompasses the whole gamut of administrative management and social actions right from policy decisions at the highest level down to community preparedness. Many authors, both from local and overseas origins, have contributed to the disaster management literature. The work *Disasters in Bangladesh* edited

by K. Nizamuddin [2001] discussed about the need for a holistic approach in the management of disaster in Bangladesh and how to overcome the impact of disaster in a combined way.

The book entitled *Options for Flood Risk and Damage Reduction in Bangladesh* [2006] Edited by Kamal Uddin Siddiqui & A.N.H. Akhtar Hossain addresses the impacts of floods on the economy of Bangladesh and flood disaster management were narrated elaborately. Nonetheless, the mitigation program of the government and other agencies was discussed inadequately in this work.

From Crisis to Development: Coping with Disasters in Bangladesh jointly edited by Hameeda Hossain, Cole P. Dodge and Fazle Hasan Abed described the practical experience of disasters in Bangladesh that lacks material resources. The work demonstrates that this country is blessed with resourceful people. A common Bangladeshi man or woman has mastered the skills of living through an endless string of adverse circumstances. The book also presents the ideas and efforts of the inner strength of Bangladesh in order to construct the future of the country around them. Prof. D.K. Sinha's edited book *Natural Disaster Reduction for Nineties: Perspectives, Aspects & Strategies* provided a generalized overview of natural disaster, disaster management and mitigation.

Disaster Mitigation in Asia and the Pacific, an ADB publication highlighted some case studies regarding disasters in Asia and the Pacific. In this publication, the characteristics of the country wise disasters and how to overcome them are discussed. The post disaster rehabilitation program taken by different countries was also discussed elaborately. *Natural Disasters and Development in a Globalizing World*, an edited book by Mark Pelling focuses on the risks and vulnerability of the mankind throughout the whole world and emphasized the need for addressing the disaster in a concerted manner. Another work by J.M. Albala- Bertrand on *The Political Economy of Large Natural Disasters with Special*

Reference to Developing Countries emphasized on the socio-economic framework of disaster management rather than on disaster policy prescription. This framework is also intended to facilitate a critical analysis of existing viewpoints on disasters, particularly in relation to the economy. The book also refers especially to developing countries affected by large natural disasters in the last three decades. As most of views in this work derive from disaster analysis in developed countries, especially the US, the situation in the developing countries, especially of disaster management in Bangladesh, is somehow missing.

1.2 Why is this study?

The disaster of 15 November 2007, popularly known as Sidr-2007, has caused huge sufferings to people's life and loss of properties. Bangladesh has been trying to stand on its feet since the catastrophic Sidr. The present research topic Disaster Governance: Experience of Sidr 2007 in Mirjagong Upazila encompasses the entire gamut of disaster management in Mirjagong Upazila in Patuakhali district. In order to make it an insightful analysis, adequate steps were taken. Some issues of international disaster management were covered so that comparative measures could be explored to cope with the pre-disaster tasks and help implement the post disaster recovery programs in future.

Currently, the district administration is the focal point of all disasters management and operates under the name of deputy commissioner's emergency fund. But the allocation for that fund is very inadequate to meet up the emergency situation. Moreover, the flat rate allocation in all districts is a common phenomenon. In every year the coastal districts experience natural calamities but flat rate allocation of amounting Tk.50,000/- and 50MT rice is very negligible. In view of the facts, the current thesis argues that government should increase the emergency allocation under DC's relief fund. It further maintains that the

post disaster recovery actions taken by government and non-government organization are not coordinated properly. As a result unequal distribution, corruption, malpractice, overlapping, nepotism becomes a common practice.

It may be mentioned here that in Bangladesh society, there are three classes, the upper, the middle and the low. The upper class is generally beyond the reach of disaster. They need not any financial help to tackle the disaster. The middle class is seriously affected in every disaster, but practically they are being neglected during post disaster recovery like relief operation and rehabilitation program. This opinion is gathered from my personal observation and people's comment of the Sidr hit areas. Given the fact, the present thesis maintain that besides the lower class people the government should also pay due attention to the middle class, who cannot compete with the contenders in case of receiving relief materials, and rehabilitation facilities. So, the needs of the middle class should be addressed properly so that their loss can be minimized. It further argues that there should be an apex coordination body permanently located in every district in the coastal areas and relief and rehabilitation works should be done in a single body rather than manifold entities.

1.3 Objectives

Having an assumption that Bangladesh is lagging behind in disaster governance, the present thesis tries to make an empirical investigation in order to tackle future catastrophic disasters like cyclone, hurricane and Sidr. The work argues for a budgetary allocation in order to tackling disaster in Bangladesh. If the government has an allocation for disaster governance in every fiscal year, the quantum of resources mobilization would be sufficient to meet the need of disaster affected people. It would enable govt. to easily allocate money from this accumulated fund in hour

of natural disaster. The mechanism can help reduce financial assistance from the donor communities. The thesis invites the policy makers to think about the need to pay attention to this.

The selection of the present topic was to partly justify the above arguments as well as to investigate how much losses to human life and property have caused to the selected area and how responsive the government machinery was in handling the situation. Another pertinent issue of the investigation was to formulate future course of action to minimize the loss during and post disaster concerted activity. Thus, the objectives of the thesis can be summarized as follows:

- To identify the existing problems of coordination in disaster governance in Bangladesh
- To suggest measures/recommendations to help improve traditional disaster governance to integrated disaster management
- To earmark government funds in every fiscal year in order to tackle natural disasters, especially in the coastal areas.

1.4 Methodology

In order to meet the objectives as outlined above, attempts have been made to go by the following steps:

The study analyzes the perception of disaster management both in national and international perspectives Data has been collected from the primary stakeholders of Sidr hit areas of Mirjagong Upazila in Patuakhali district. The stakeholders include teachers, officials, farmers and victims of Sidr -2007 in that area.

A questionnaire was formulated by comprising 16 questions to facilitating raw data collection. Through the questionnaire the Sidr victims were interviewed about their past experiences and post Sidr relief operations and recommendations were sought from them.

Relevant books, reports, journal articles from local and overseas origins were consulted for information and analysis on disaster management.

Newspaper reports and personal interviews were reviewed in order to critically analyzing the issue and for drawing relevant points and references as part of preparation for the write-up.

1.5 Limitations

In developing country like Bangladesh, which has been trying hard for national development, and economic growth, could not pay much attention to disaster mitigation measures. This has resulted in enormous losses when natural hazards hit them and this, in turn has imposed further constraints on development efforts. At the same time with the increase in population growth, there is extensive unregulated exploitation of natural resources causing degradation of environment and affecting quality of life of the masses. Some expert claims that uncontrolled overexploitation of forest resources has been making new areas vulnerable to disaster and at the same time increasing its severity in existing disaster prone areas (Sazanami, 1990:23). Other environmentalists maintain that growing concentration of industry and population in large metropolitan areas in the Western countries, including China and India has been also causing the deterioration of climate change and environment disaster in Bangladesh. For obvious reasons, the study could not pay deeper attention to this growing debate.

Details of hazards and vulnerability could not be incorporated in the thesis because of the vastness of the subject. Similarly details of relief operations, FFW program, test relief and other food aided activities were also kept outside of this exercise. Because of time constraint detailed study on whatever books and documents were available could not be made. The data used in this study are mostly primary and some of them are secondary.

1.6 Scope and nature

In Bangladesh disaster management has generally been perceived previously to mean management after a disaster has occurred (i.e. disaster response). Consequently little or no alleviation from the impact of future disasters has been achieved. Such an approach used to give rise major setbacks at the time of disaster. To be effective in disaster management, the nation in fact needs to develop comprehensive approach. The old concept of acting only after the occurrence of a disaster has been dramatically replaced during recent past and the concept of covering all aspects of disaster management cycle came into being, instead.

The spirit of this new concept emphasizes upon maintaining an appropriate balance of prevention, mitigation, preparedness, response, recovery and disaster related development. An approach of this kind because of its interrelationship with national development is more likely to ensure that potential benefit from disaster is realized. The mitigation and containment of disaster effects is, therefore, an important asset towards sustainable economic development of Bangladesh. GOB is, therefore, committed to reduce human, economic and environmental cost of disaster by enhancing disaster management capacity and ensuring optimum coordination and best utilization of resources.

To make the thesis investigative and sequential, the whole study has been divided into 6 chapters, each chapter containing specific area of importance. Utmost care has been given to avoid duplication and repetition of the facts. The contents of the chapters are arranged in the following order:

Chapter-1: Introduction

Chapter-2: Natural Disaster in Comparison.

Chapter-3: Global Disaster management

Chapter-4 Disaster Governance in Bangladesh

Chapter-5 Experience of Sidr-2007

Chapter-6 Recommendations and conclusions

A substantial improvement has been made in this field but much more is needed to be done to reduce the damaging impacts of the disasters. Natural disasters like cyclones, floods, droughts etc cannot be controlled fully but with integrated disaster management and coordinated efforts, the damaging impacts of disasters can be reduced substantially. Since economic development is closely linked with disaster reduction in Bangladesh, appropriate measures have been recommended in this work.

Chapter- 2

Natural Disasters in Comparison

Geographically, Bangladesh is situated within the tropical zone. Cyclone occurs in the tropical regions is called tropical cyclones, which are usually destructive and Bangladesh being situated in the tropical zone, is affected by this type of cyclone. Bangladesh is prone to frequent destructive tropical cyclones associated with tidal surge, particularly in the pre-monsoon months of April May and post monsoon months of October November. The frequency and magnitude of cyclones in Bangladesh has a very telling effect on her economic development. The impact of natural disasters in terms of casualties and material losses are on the increase due to high population density in the country. The current chapter demonstrates a comparative study of the natural disasters in Bangladesh in global and regional perspective.

2.1 Typology of disasters

The term 'disaster' is of administrative origin, which has been applied to any event causing loss or suffering on a scale sufficient to warrant an extraordinary response from outside the affected area or community. In determining whether or not an event is to be considered a disaster, the word has been used in a variety of ways. For example, disaster often refers to the disaster agent, such as a hurricane, earthquake or flood. A second use of the term refers to the physical impact which the agent has, such as damage to property or loss of life (Brown: 1979, 53). Disaster also has a meaning dependent upon an evaluation of the agent. Damage may be evaluated as disastrous in one area but not in another. This depends upon the relative vulnerability of the community. Finally,

disaster can mean the socioeconomic disruption created by the physical event.

In view of the above discussion, disasters could be categorized into three: (i) natural, (ii) man made, and (iii) a combination of both. Within the category of man made disasters, there are a variety of conditions resulting in disaster. Within the category of natural disasters, the following are noteworthy.

- a) Meteorological disasters: storms (cyclones, hailstorms, hurricanes, tornadoes, typhoons and snowstorms), cold spells , heat waves and droughts
- b) Topological disasters: earthquakes, avalanches, landslides and floods and
- c) Biological disasters: insect swarms (e.g. locust) and epidemics of communicable diseases.

By contrast, man made disasters include:

- a) Civil disturbances: riots and demonstrations.
- b) Warfare: conventional, nuclear, biological, chemical, guerilla warfare, including terrorism.
- c) Refugees : forced movements of large numbers of people usually across frontiers and
- d) Accidents: transportation accidents, collapse of buildings dams etc mine disasters and technological failures such as pollution, chemical leaks or nuclear accidents.

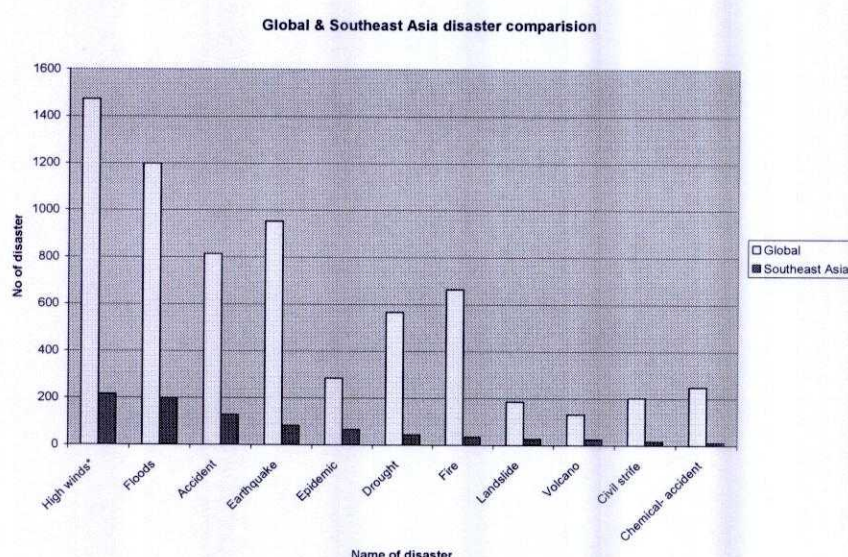
In his pioneering work *Disaster Management: A Disaster Manager's Handbook*, Carter W. Nick scaled down global disasters into two categories, which are as follows:

Natural	Manmade
Flood	Fires
Cyclone	Industrial accidents
Tornado	Chemical hazards

Earthquake	Environmental pollution
Drought	Disposal of toxic waste
Volcano eruption	Road accidents
Tsunami	Mass accidents
Landslide	Arsenic pollution
Bushfire	Civil unrest
Epidemic	
River bank erosion	

(Source: Carter, 1991:9)

The number of humanitarian disasters, triggered by a natural hazard, has doubled across the globe every decade since the 1960s. Some records show that, however, there has been a fivefold increase in the frequency of disasters, from the 1960s to 1980s, coupled with increased economic and human losses. In view of the global scenario, Figure 1 demonstrates a comparative study of disasters in Asian countries in recent years.



Source: self-compilation

Table: 1: Frequency of disasters in the world and in the Southeast Asia during 1990-1991

Types of disaster	Global		Southeast Asia	
	Number	Percentage	Number	Percentage
High winds*	1473	21.09	216	24.32
Floods	1198	17.15	197	22.18
Accident	814	11.66	127	14.30
Earthquake	951	13.62	83	9.35
Epidemic	284	4.07	66	7.43
Drought	566	8.10	45	5.07
Fire	663	9.49	35	3.94
Landslide	186	2.66	27	3.04
Volcano	132	1.89	26	2.93
Civil strife	202	2.89	18	2.03
Chemical- accident	247	3.54	13	1.46
Cold wave	55	0.79	12	1.35
Heat wave	33	0.47	8	0.90
Tsunami	31	0.44	5	0.56
Famine	35	0.50	3	0.34
Displaced persons	85	1.22	6	0.68
Avalanche	29	0.42	1	0.11
Total	6984	100.00	888	100.00

Source: SEAR Study: WHO by Mokammel 1992:28

*High wind includes all cyclones, typhoons, hurricanes and major storms.

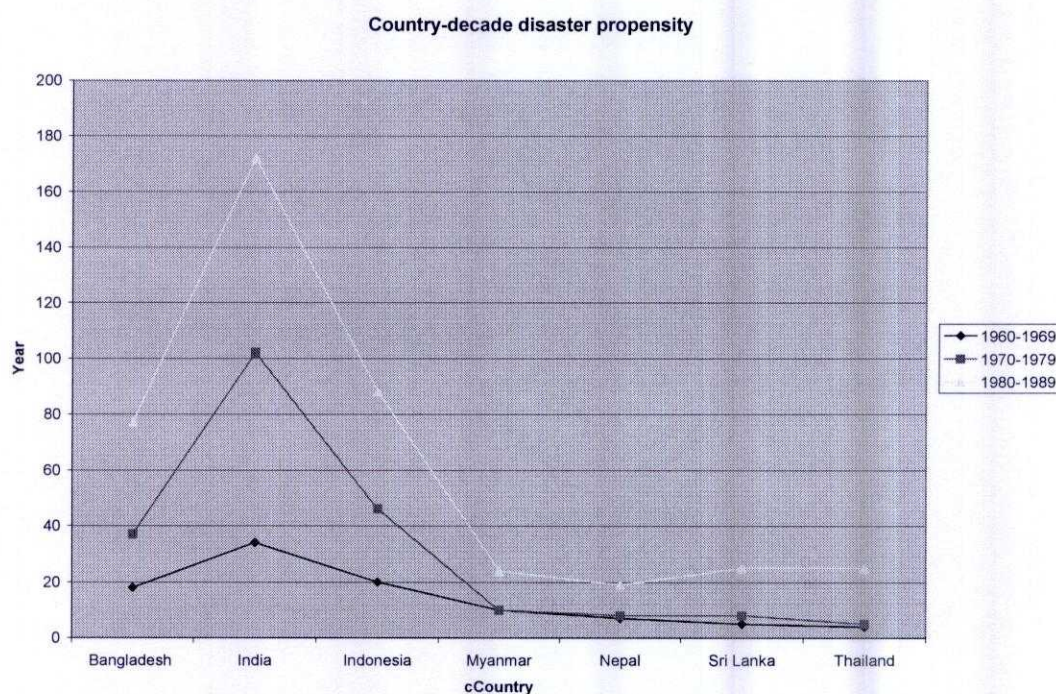
Table 2 shows that natural and other types of disasters continually affect several countries of the Southeast Asian region, particularly Bangladesh, India and Indonesia. It further indicates the increase in number of events and scope of disasters during the 1960s, 70s and 80s.

Table 2: Countries with the highest prevalence of disasters by ten-year periods, 1960-69 to 1980-1989*

Countries	1960-'69	1970-'79	1980-'89
Bangladesh	18	37	77
India	34	102	172
Indonesia	20	46	88
Myanmar	10	10	24
Nepal	7	8	19
Sri Lanka	5	8	25
Thailand	4	5	25

Source: Mokammel 1992: 28

Recent studies demonstrate that Bangladesh has witnessed about 80% of the disasters, the combined disasters of SAARC and ASEAN countries over the past 25 years, while the other countries in the region have lived through only 20% (Shamsul, 1999:9). Figure 2 demonstrates the progressive trends of natural disasters in Bangladesh in recent decades.



Source: *Asian Institute of Technology*, Bangkok, (Mokammel 1992:29).

Figure 2 shows the reported events only. Lack of reporting for several countries in the region effectively distorts the ranking of countries. Nevertheless, as compared to the regional cyclones and floods, recurrent disasters cause huge loss of lives and severe damage to crops and properties in Bangladesh.

2.2 Disasters in Bangladesh

In his article on 'Disaster Management', Muhammad Saidur Rahman discussed about different types of disasters in Bangladesh and showed ways how to overcome those disasters. The following discussion demonstrates how Bangladesh, being a delta country, has to face other natural catastrophes in a multiple ways.

A large part of the snow melted waters of the Himalayan Mountain drain into the Bay of Bengal. The Ganges River, entering from the west, drains water from the entire southern side of the central Himalayan range through the plains of north central India. The Brahmaputra river that enters Bangladesh from the north, drains water from the northern side of the Himalayan as well as the Indian states of Arunachal and Assam. The Meghna river that enters Bangladesh from the north east, drains rain water of the Indian states of Meghalaya and Tripura. Water from cross border sources sometimes causes floods during the monsoon season and draughts during the summer as a result of the arbitrary control of Himalayan water by India.

Bangladesh is a riverine country and is situated at the lower most reaches of three great river systems viz. the Ganges, the Brahmaputra and the Meghna, which drain a vast basin having a heavy monsoon rainfall. Besides Himalayan water, floods are also contributed by heavy rainfall. Since the monsoon clouds burst more or less simultaneously all

over the entire catchments, the country's network of rivers has to discharge efficiently an enormous amount of flow coming down from an area 12 times its own size (Kafiluddin, 1991:10). The low gradient of the rivers of Bangladesh and a flat terrain contribute greatly to the causation of floods. As a result of overflowing of the river banks the excess waters submerge the adjoining areas. This type of flood is experienced by small rivers of Bangladesh winding through a hilly catchments area.

In the second type of flood there is an onrush of rain waters down the hill slopes over land and their ultimate pooling in the low lying areas. Large parts of Bangladesh are below the high tide level. During spring tides, tidal waves surge over a wide area of the coastal belt, Bangladesh thus experience normal monsoon floods, flash floods, tidal foods and floods due to the onrush of water.

The drought of 1989 which occurred as a sequel to successive devastating floods of 1987 and 1988 had hit areas on drinking water supply situation in affected regions of Bangladesh. Bangladesh experienced 19 droughts, major or minor, within a span of 31 years (Kafiluddin, 1991:13). There were major droughts in 1951, 1957, 1958, 1961, 1972 and then in 1979, when 46.54% of the country was affected.

Minor Earthquake, which is common in Bangladesh, occurs due to sudden and violent movement of the earth's surface and various changes in soil layers. Thrust faulting in a plate to plate interaction area of soil layers causes crustal uplift, leading to production of a sudden wave by which some parts of the surface of the earth either sink or rise above the sea level (Kafiluddin, 1991:14). The usual type of earthquake may cause collapse of buildings, injuries of human beings, may induce fires, produce floods from collapsed dams and land or mud slides. The earthquake of June 12, 1989 which occurred in Bangladesh, killed a child and injured 20 people. Two thirds of the country including the Dhaka city was hit by a mild tremor lasting for 23 to 50 seconds.

The cyclones and floods pose the greatest risk to Bangladesh on a country level. Sub nationally, the northern and eastern regions of the country are susceptible to earthquakes while the southeast is particularly vulnerable to cyclones, droughts and earthquakes. Bangladesh is also vulnerable to other natural and man made hazards, such as river bank erosion, tornadoes, Tsunami, the high arsenic contents of ground water, water logging, water and soil salinity etc. Bangladesh is also at a great risk from global climate change impacts because of its very low elevation and exposure to various climate related hazards. Although the magnitude of these changes may appear to be small, they could substantially increase the frequency and intensity of existing climate events, such as floods, droughts, cyclones etc.

Table 4: Major disasters in Bangladesh in recent years

Year	Disaster type	Death
1988	Flood	2373
1988	Cyclone	5704
1989	Drought	800
1991	Cyclone	138868
1996	Tornado	545
1997	Cyclone	550
1998	Flood	1050
2004	Flood	747
2007	Flood and Sidr	3363

Source: Self-compiled

The economy and life style of the country are predominantly dependent on agriculture having strong linkage with climatic conditions. The weather systems in Bangladesh become, at times, hazardous due to violent manifestations of the nature. Natural hazards turn out to be

disasters causing colossal loss of human lives and properties. Because of its geographical locations, Bangladesh is one of the most disaster prone countries in the world. The most prominent natural disasters of which Bangladesh is the worst victim is tropical cyclones followed by storm surges, floods, droughts, earthquakes, tornadoes, river-bank erosions, *monga*, arsenic pollution etc.

2.3 Cyclones on record

The area that comprises Bangladesh today, experienced cyclones since the beginning of its recorded history. A cyclone is a relatively small and intense low latitude pressure area having wind circulation in an anti clockwise direction in the northern hemisphere and clockwise direction in the southern hemisphere (Kafiluddin, 1991:12). The first account of a cyclone and tidal surge in Chittagong is traced in Abul Fazal's *Ain-I-Akbari* that goes on telling a place called Mirsari in Chittagong was hit by a severe cyclone and tidal surge in the 16th century (Mokammel, 1992:30). A large number of people died and excepting a temple all houses were destroyed. *Ain-I-Akbari* and *Riaz-us-Salatin* recorded the other oldest account of a similarly violent cyclone in Chittagong in 1582.

Records also suggest that during the colonial period a number of cyclone strike Bangladesh from time to time. On 3 June 1775 a severe cyclone hit Chittagong from 7 pm to midnight, accompanied by torrential rains. Excepting five buildings in Chittagong town, all houses were razed to the ground (Mokammel: 1992). Two years later, in 1777, another cyclone hit Chittagong. Two ships anchored in the port sank and all thatched huts were blown away. A severe cyclone hit again in 1876 along the coastal belt about 644 kilometers from Teknaf to Khulna. According to the Met office records, on 1 November 1876, the 'Great Bakergong storm' hit Barisal region with a wind force of 220 kmph killing about two lakh people (Daily Star, 17 November 2007). The storm was considered a

great human disaster, the records say adding that the tidal surge created by the storm was as high as 10 feet to 45 feet.

On 24 October 1897, a severe cyclone hit Chittagong area, killing several thousand people in Kutubdia and Banshkhali. All the shops of Rangamati Bazar were damaged by the cyclone. The velocity of the cyclone between Cox's Bazar and Chittagong was between 113 to 129 kilometers per hour. It damaged the Kutubdia lighthouse built in 1877. The cyclone and accompanying tidal bore killed 14,000 people in Chakoria. The cholera epidemic following the tidal surge killed another 18,000 people.

There were also cyclones in the then East Pakistan in 1960 and 1970. On 9 October 1960, a cyclone ravaged Chittagong and hit Agnate in Noakhali and adjoining islands of Bhola and Patuakhali; in Ramgati alone 3000 people died due to cyclone and tidal surge. On 31 October 1960, a severe cyclone hit Chittagong, with a velocity of 120 mph, the worst affected areas being Kutubdia, Banshkhali, Anwara, Gohira, Double Mooring, Patenga and Halishahar. On 30 May 1963, a severe cyclone storm hit Chittagong area and the southern coastal belt. Wind speed was 100 mph, which caused death of tens of thousands of people and loss to houses, cattle, boats etc. were substantial. On 12 November 1970 a terrible cyclone, packing a hurricane speed of 222 kmph, ravaged the coastal districts of Barisal, Patuakhali, Noakhali, Manpura and Bhola and washed away a million people under 4.5 to 10 meter high waves. It has since been remembered as the fearful November 12. As the eye of the storm passed over the Meghna channel, washed away the entire alluvial plain lands from Sandwip to Patuakhali. It was the worst disaster of the century that claimed 500,000 lives (Mokammel, 1992:31). Chittagong city escaped its full fury but many ships and thousands of boats were sunk or damaged.

Others cyclones that hit post-independent Bangladesh took place in 1974, 1985, 1986, 1988, 1991, 1997 and 2007. On 25 May 1985, a localized cyclone storm with a tidal surge blew over Urir Char under Sandip upazila. Extensive localized deaths and damage took place, claiming 6504 as dead. The tidal bore was 4.5 to 6 meters high. Tornado which means a violent and destructive whirlwind is also very common in Bangladesh. A severe tornado that had lashed Manikganj is considered to be one of the most disastrous natural calamities in Bangladesh. The cyclone in 1991 and the recent super cyclone called Sidr are the dangerous ones in Bangladesh.

On 15 November 2007, the super cyclone called Sidr not only took away thousands of human lives but also caused enormous loss and damage to crops, live-stock and other property. In a review article *The Daily Star*, on 17 November 2007, revealed that the cyclonic storm of hurricane strength, Sidr is one of the 10 fiercest cyclones that had hit the region of Bangladesh in the 131 years between 1876 and 2007. Sidr is compared as fierce a cyclone as the ones that hit the country in 1970 and 1991, whereby 5 lakh and 1.4 lakh people were killed respectively. The above accounts suggest that the aftermath of cyclone killed more people through epidemics than by the cyclone and tidal surge.

2.4 Conclusion

This chapter deals with natural disasters in global as well regional perspective. It shows that natural disaster has direct and indirect loss to property and lives. The severity and intensity of disasters is a great concern for the world community. This concern should be addressed properly with concerted efforts and efficient use of resources. The vulnerable areas like Bangladesh and other south Asian countries should be given more weights in terms of pre and post disaster governance. The sooner the issue will be addressed by the global community the better would be for the endangered humanity in Bangladesh.

Chapter 3

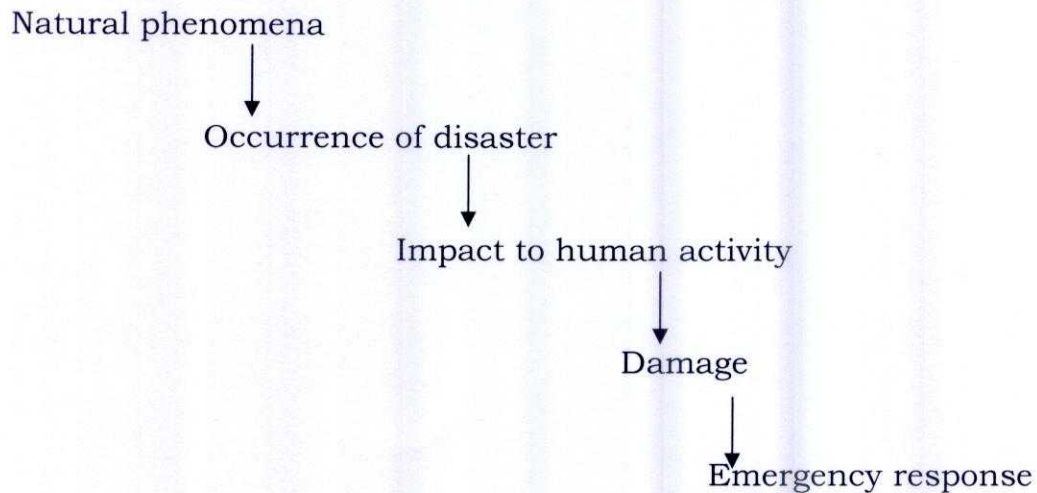
Global Disaster Management

The notion about international cooperation and assistance in disaster management is apparently a new phenomenon. It was initially started with the US Marshal Plan immediately after the World War II. This, in fact, constituted international disaster assistance on a massive scale. Europe had been shattered by the disaster of global war and the continent was clearly going to be threatened by political, economic and social uncertainties; unless it could have been provided substantial assistance towards recovery (Carter, 1991:10). The aim of the Marshal Plan was to rehabilitate the economies of the post World War II. In order to create stable conditions where democratic institutions could survive, European nations accepted this plan. The plan's concept of economic aid was so successful that it was later extended to underdeveloped countries worldwide (ADB, 1991:11) In line with these international assistance activities of the US, other programs began to develop. These were concerned with countries, which were getting independence from former colonial masters such as Britain, Holland, France and Germany.

3.1 From traditional to modern approach:

The post-independent countries, in many ways, were accustomed with traditional concept of disaster prevention, whereby disaster was viewed as natural phenomena. After the occurrence of disaster and its damage or impact on human lives, emergency response was followed. This practice could be showed in the following figure:

Figure 1: Traditional perception of disaster management



With the changes of time a new concept of two directional disaster preventions has been felt needed because traditional one-way disaster management concept has serious limitations. An integrated approach of disaster management combining top down, and bottom up management is suggested nowadays, because it can integrate the total communications flow. Reduction of communication gap is recommended for help minimizing the loss.

Moreover, it is also felt that securing safety has to be based on nothing but people's self help efforts. The effective management of disaster prevention facilities cannot be developed unless people who receive benefits from them participate positively in the maintenance of these facilities. People living in dangerous areas in general belong to low-income class and their activities are confined to daily struggle for survival so that they have no room to think about disaster prevention and preparedness. Even though disaster prevention facilities were established, a great deal of global effort would be required to maintain and manage them. It is hard for governments of the underdeveloped countries to meet every such need without foreign assistance.

3.2 Emergence of IDNDR

Of late, however, disaster management was picked up as humanitarian issue by the United Nations (UN) during the 1990s. International Decade for Natural Disaster Reduction (IDNDR) has been launched in January 1990 by UN and it is said to be a US inspired and UN sponsored program. The IDNDR concept was first presented by Dr. Frank Press, an eminent seismologist and president of US Academy of Sciences , in his address at the 8th world congress on earthquake engineering in 1984 (Sinha, 1992:26). Subsequently, on 11 December 1987, the UN in its resolution 42/169 decided to designate the 1990s as the IDNDR. Under the auspices of the UN the international community paid special attention to fostering international cooperation in the field of natural disaster reduction. In the resolution the General Assembly also noted the following important aspects:

- Recognizing the responsibility of the UN system for promoting international cooperation in the study of natural disasters of geophysical origin and in the development of techniques to mitigate risks arising there from as well as for integrated coordinating disaster relief, preparedness and prevention including prediction and warning.
- Considering the concept of global programs for national disaster reduction is predicted on collaborative efforts among culturally and economically diverse nations, together with relevant organizations of the UN system and other national and international non-governmental organizations including the scientific and technological institutions concerned.
- Deciding that the objective of this decade is to reduce through concerted international actions especially in developing countries, loss of lives, property damage and social and economic disruption caused by natural disasters such as earthquakes, windstorms

(cyclone, hurricanes, tornadoes, typhoons) tsunamis, floods, landslides, volcano eruptions and other calamities of natural origin (SAZANAMI, 1990:29).

With the adoption of above aspects the world body was convinced that concerted international action for the reduction of natural disasters over the course of 1990s would give genuine impetus to a series of concrete measures at the national, regional and international levels. The goals of the UN disaster management were decided as follows:

- To improve the capacity of each country to mitigate the effects of natural disasters expeditiously and effectively, paying special attention to assisting developing countries in the establishment when needed, of early warning systems.
- To devise appropriate guidelines and strategies for applying existing knowledge, taking into account the cultural and economic diversity among nations.
- To foster scientific and engineering endeavors aimed at closing initial gaps in knowledge in order to reduce the loss of life and property.
- To disseminate existing and new information related to measure for the assessment, prediction, prevention and mitigation of natural disasters through programs of technical assistance and technology transfer, demonstration projects and education and training, tailored to specific hazards and locations and to evaluate the effectiveness of those programs (SAZANAMI,1990:29).

The IDNDR has a broad perspective for unified opportunities for the world community to undertake in a concerted manner endeavors for reducing the human, economic, social and often, cultural dislocations infected by natural disasters worldwide. All studies, thoughts, seminars,

workshops during IDNDR have emphasized a truly integrated approach of disaster management having dimensions all over the world.

3.3 Types of International assistance:

There is a variety of international assistance available for pre-disaster and post-disaster management. These are as follows:

Pre-disaster assistance: pre-disaster assistance from international sources can take a variety of forms. The following are typical examples:

- ❖ Assistance in prevention/mitigation: assistance in building a system of dams, aimed to prevent flooding. Development of monitoring and warning systems for instance volcanic eruption.
- ❖ Assistance in preparedness-
 - Planning: provisions of assistance in the formulation of plans at national and other levels; also with departmental operational guidelines and standard operating procedures.
 - Organization: the establishment of a national disaster management centers, office or section.
- ❖ Systems and facilities: provision of or assistance with warning system, communication system, emergency operation systems, protection of key installations such as power supplies.
- ❖ Equipment: stocking of emergency items such as generators, chain, saws, shovels, cooking equipment, shelter materials and medical equipment.
- ❖ Training: provision of overseas training and assistance within country training.

- ❖ Assistance in response operation: as with pre disaster circumstances assistance in response operations also take various forms. Some common examples are:
 - Monitoring and warning of potential disaster impact; for instance assistance from world meteorological networks or tsunami warning centers.
 - Post impact survey and assessment for instance, aerial photographic or visual reconnaissance
 - Provision of emergency assistance team: for instance medical teams, defense force teams, and other specialist teams.
 - Provisions of emergency equipment and supplies; for instance communications, generator, clothing, shelter materials, food, transport and medical supplies.
 - Provisions of specialist personnel; for instance to install and operate water purification plant
 - Temporary provision of major response capabilities; for instance helicopter capability for various emergency roles (including survey and assessment and food distribution), shipping capability for movement of heavy/bulky supplies, off road vehicle capability.
- ❖ Assistance in recovery program: the post disaster recovery process usually consists of a series of distinct but inter related programs for covering infrastructure, medical and health system, education facilities and so on. International assistance may, therefore, be directed towards a specific recovery program or comprise some form of contribution to overall recovery for example:
 - Financial grants or credits
 - Building materials
 - Technical equipment

- Agricultural rehabilitation
- External feeding programs
- Specialists or specialist teams
- Food for works
- ❖ Assistance in future developments: In many cases international assistance in post disaster recovery may develop or merge into long term development programs for instance development of transport systems agriculture programs.
- ❖ International and local community participation: In integrated disaster management and regional development planning collaboration between international and local community is important.

The ultimate aim of the policy of community involvement is to encourage participation of common people in integrated disaster mitigation to help create a self reliant society, which would be able to contribute towards integrated disaster preparedness, cooperative disaster fighting and post disaster recovery as well as local level integrated planning, integrated implementation, operation and maintenance of project and infrastructure facilities as a whole.

3.4 Experiences in Asian countries

To talk about the disaster governance activities in some of the Asian countries, say for example, we could start with our next door neighbor India in the first place. In India, disaster management is the responsibility of the State Governments. At the central Government level the Ministry of Agriculture operate as a coordinating Ministry. *Country Report on Disaster Management in India of 1999* maintained that the role of central Government is mainly supportive. They do not have a consolidated set of rules and regulations to deal with disasters. However,

relief manuals and codes are available for undertaking emergency operations.

Disaster governance in Japan is much older as compared to India. *Disaster Counter Measures Basic Act (Act no. 223 of November 15, 1961)* was passed by the Japanese Parliament in 1961. The legislation became functional from 10 July 1962. The objective of the Act was to ratify the old disaster reduction framework and promote comprehensive and systematic efforts by the government to reduce disasters. *Country Report of the National Land Agency of Japan* in 1999 suggested that the government maintain operational plans for disasters prevention and local plans for disaster prevention. All these plans obtain their legal coverage from the Disaster Countermeasures Basic Act, 1961.

country paper on disaster management in Philippines indicated that by presidential decree, the Philippine government through its civil defense administration has established a National calamity and disaster preparedness plan. This plan provides a highly decentralized organizational and operational disaster preparedness structure with uniform functional procedure that are implemented by disaster coordinating councils, each with their own emergency, operation center.

In Malaysia, the national security division in the Prime Minister's department is responsible for coordination of all activities related to disaster. The national Security Council (NSC) directive no. 20 provided guidance on the management of disaster including the responsibilities and functions of the various agencies under the integrated emergency management system. To carry out the responsibilities of the NSC of coordinating all the activities related to disaster i.e. prevention, preparation, response, recovery and rehabilitation, the Disaster and Relief Committees were established at the Federal, State and Disaster levels.

In Nepal, the National Disaster Relief Act 1982 was promulgated to combat disasters. The act has been amended twice in 1989 and in 1992.

Before this Act came into being, disaster management activities were managed in a disorganized way. The Ministry of Home Affairs acts as focal point in coordinating activities related to disasters. China, a country with vast territory, complex climate, geographical and geological conditions, suffers from various disasters such as droughts, floods, earthquakes, typhoons, landslides etc. The Ministry of Civil Affairs acts as the coordinating body in disaster activities. It has no laid down acts or laws to deal with the disasters. Every disaster management department assumes its responsibilities and takes measures according to its rights and obligations and coordinates with other departments according to the needs of disasters.

3.5 Conclusion

Besides the international assistance, governments are mainly responsible for the implementation of disaster management and regional development policies. But it may not be possible on the part of the government to meet all the needs of all the people. In many countries where vast majority of the population lives in the rural areas, it is never possible on the part of governments to reach all people everywhere during the time of disaster and emergency. If we take the example of early warning system, which requires people's participation in a positive way, would be meaningless if there are not sufficient facilities available to disseminate such information to the endangered people.

Chapter 4

Disaster Governance in Bangladesh

Asian Development Bank publication *Disaster Management: A Disaster Manager's Handbook* discussed about the implication of disaster threat, national disaster management policy, major requirements for coping with disaster, and the disaster management cycle (Carter, 1991). Adoption of long term measures for preparation, mitigation of disaster management and facilitating support requirements, for example, training, public awareness and research were also discussed in the book. The current chapter addresses how these measures would be valuable in combating natural disasters in Bangladesh. In order to understand disaster governance in Bangladesh, the chapter focuses on various dimensions of organizational preparedness and administrative mechanism to combat disaster in the country.

4.1 Managing Disaster

Being a disaster prone country, Bangladesh has an elaborate system of managing disaster. Standing orders released by the erstwhile Ministry of Disaster Management and Relief in 1999 emphasized the need for post disaster operations and designed overall strategies and measures under national disaster management program. The standing order on disasters (SOD) assigns roles and responsibilities to relevant government agencies as well as to disaster management committees (DMCs) at all levels. This standing order is a basic guideline for the institutional arrangements and defining the responsibilities of various line ministries, departments, organizations, agencies for effective handling of disaster in Bangladesh.

In the present context, Ministry of Food and Disaster Management (MoFDM) is the national focal point for disaster management in

Bangladesh. It manages disasters through its three agencies: Disaster Management Bureau (DMB), Directorate of Relief and Rehabilitation (DRR) and Directorate General of Food. It is assisted by other government agencies such as Fire Services and Civil Defense Department, Disaster Emergency Centre of Armed Forces Division, Bangladesh Meteorological Department (BMD), Flood Forecasting and warning Center (FFWC), Cyclone Preparedness Program (CPP) etc. MoFDM has technical and scientific partnership with Space Research and Remote Sensing Organization (SPARSO), Geological Survey of Bangladesh (GSB), Center for Environmental and Geological Information System (CEGIS), Water Resources Planning Organization (WARPO), Institute of Water Modeling (IWM), Bangladesh University of Engineering and Technology (BUET) etc.

A series of inter-related institutions, at both national and sub-national levels have been created to ensure effective planning and coordination of disaster management and emergency response events. Currently, there exists a central national council (Appendix A), district committee (Appendix B) and union level committee (Appendix C) which are concerned with disaster management. At the field level, the office of the Deputy Commissioner at the district level, the office of the Upazilla Nirbahi Officer at the Thana level and the Union Parishad at the lowest level of the administration play crucial roles in disaster management. *Organizational structure of the national level Council/Committees* are as follows:

- I. National Disaster Management Council (NDMC): Headed by the Prime Minister the council formulates and reviews the disaster management policies and issue directives to all concerns.
- II. Inter-Ministerial Disaster Management Coordination Committee (IMDMCC): Headed by the Minister in charge of the Ministry of Food and Disaster Management (MoFDM) the

- committee implements disaster management policies and decisions of NDMC or government.
- III. Cyclone Preparedness Program Implementation Board (CPPIB): Led by the Secretary, Ministry of Food and Disaster Management, the board reviews the preparedness activities in the face of initial stage of an impending cyclone.
 - IV. National Disaster Management Advisory Committee (NDMAC): The committee is led by an experienced person having been nominated by the Prime minister.
 - V. Disaster Management Training and Public Awareness Building Task Force (DMTATF): It is headed by the Director General of Disaster Management Bureau (DMB) to co-ordinate the disaster related training and public awareness activities of the Government, NGOs and other organizations.
 - VI. Focal Point Operation Coordination Group of Disasters Management (FPOCG): Chaired by the Director General of DMB the group reviews and coordinates the activities of various departments /agencies related to disaster management and also reviews the contingency plan prepared by concerned departments.
 - VII. NGO Coordination Committee on Disaster Management (NGOCC): It is headed by the Director General of DMB to review and coordinate the activities of concerned NGOs in the country.
 - VIII. Committee for Speedy Dissemination of Disaster Related Warning /Signals (CSDDWS): It is headed by the Director General of DMB to examine, ensure and find out the ways and means for the speedy dissemination of warning/signals among the people.

Organizational structures at sub-national levels are as follows:

- a) District Disaster Management Committee (DDMG): It is headed by the Deputy Commissioner (DC) to coordinate and review the disaster management activities at the district level.
- b) Upazila Disaster Management Committee (UZDMC): It is headed by the Upazila Nirbahi Officer (UNO) to coordinate and review the disaster management activities at the Upazila level.
- c) Union Disaster Management Committee (UDMC) It is headed by the chairman of the union parishad to coordinate, review and implement the disaster management activities of the concerned union
- d) Pourashava Disaster Management Committee (PDMC) : It is headed by chairman of pourashava to coordinate, review and implement the disaster management activities within its area of jurisdiction.
- e) City Corporation Disaster Management Committee (CCDMC): It is headed by the Mayor of City Corporation to coordinate, review and implement the disaster management activities within its area of jurisdiction.

The SOD provides detailed roles and responsibilities of all disaster management committee, relevant ministries, divisions, departments and agencies at all levels for normal period risk reduction and during emergency response periods.

4.2 Risk Management

Nowadays, the government acknowledges the need for disaster risk reduction as opposed to the earlier concepts of responding after a disaster as a necessary as well as a cost effective approach. Thus priority has been accorded to focus on community level preparedness, response,

recovery and rehabilitation (National Workshop 1998:91). Program to train people living in disaster prone areas and for improving their capability to cope with natural disasters is highlighted. Bangladesh has created a simplistic model to guide the disaster management programs including development or review of policy and training course material (National Workshop 1998:90). The model has three key elements and ensures that the move to a more comprehensive risk reduction culture remains central to all efforts.

1. *Defining the risk environment:* This element promotes the use of scientific analysis (including climate change impacts) as the basis for accurately determining the future risk environment relative to all hazards, all sectors and all geographical areas. Bangladesh has adopted the process outlined in the International Risk Management Standard AS/NZS: 4360-1999 to guide all community risk assessments.
2. *Managing the risk environment:* It promotes the design of risk reduction strategies (community based adaptation programs) as an outcome of the risk assessment process. This ensures prevention, preparedness, response and recovery programs are multi hazard focused and they move from being generic in nature to risk specific. This will enable communities to better understand their changing risk environment and thus become more resilient through proactive risk reduction efforts.
3. *Responding to the threat environment:* This involves responding to an actual threat situation. It helps Bangladesh disaster management officials to clearly articulate the difference between risk reduction and emergency response and how accurately defining risk environment can influence and enhance emergency response systems and decisions.

4.2.1 Planning

Under the MoFDM corporate plan, framework for action 2005-2009 sets out the priorities and broad strategies for achieving reform within the disaster management sector. The document ensures that there are strong linkages with the priorities of the government in respect to the achievement of goals associated with national (PRSP) and international drivers such as the MDGs, WCDR and ISDR. Each of the three operational agencies (Disaster Management Bureau, Directorate of Relief and Rehabilitation and Director General of Food) of the Ministry have prepared 2-3 year strategic plans based on the corporate plan and an operations plan detailing the priorities for each twelve month period. These plans are used to assist the MoFDG and its agencies to formulate collaborative partnership, particularly with NGOs, for sustainable delivery of services relative to each strategy.

The plan recognizes that there are many interdependent elements that make up an effective disaster management system. These elements are listed below as six strategic focus areas (National Workshop 1998). The model has three key elements and ensures. The critical factor is for each of these focus areas to be viewed as being individual inputs to a bigger picture with the output of one element, being inputs to other focus area programs.

Focus area 1: professionalizing the disaster management system

Focus area 2: mainstreaming of risk management programming (partnership development)

Focus area 3: Strengthening of community institutional mechanisms (community empowerment)

Focus area 4: expanding risks reduction programming across a broader range of hazards.

Focus area 5: strengthening emergency response systems.

Focus area 6: maintaining and strengthening the national food security system with a focus on ensuring access to sustainable food supplies.

Many of the disaster related matters fall outside the pattern of life, however, it is possible to predict many such matters with reasonable accuracy. Counter disaster measures make heavy demands as administrative legal support. The scale of logistic and administrative backing in legal form is required for debris clearance, survey and assessment, distribution of relief supplies, repairs of essential services, declaring a particular district or area as calamity area. This is also required for mobilization of resources on an emergency basis and requisitioning of various essential services. Realizing this basic reality, DMB as per the direction of MDMR has drafted the following act/plans:

- I. National Disaster Management Act
- II. National Policy and Disaster Management
- III. National Disaster Management Plans
- IV. Disaster Action Plans for District, Thana and Union levels

These are under examination at various levels and it is expected that it will be finalized soon. Necessary action plan for simplification of existing cyclone warning signals have been initiated (Salehuddin & Neena, 1992: 89). At present there exist four warning signals for river part and ten warning signals for seaports. The signals are of 200 years old and need to be made simple and understandable. Government has set up a committee to make appropriate recommendation for their improvements. The recommendations of the committee are as follows:

- a. Simplification of existing cyclone warning signals. Further expansion and modernization of FFWC of BWDB and SWC of BMD are being carried out under specific projects.

- b. Modernization of CPP with latest and most updated telecommunication equipment is under consideration of the Government
- c. Constructions of barrack houses known as *Asrayan* on governments khas lands are in progress. So far a number of *Asrayan* has been constructed and handed over to the landless poor. More and more *Asrayans* are under consideration.

The above recommendations are still under examination of the government.

4.2.2 Strategies

The management of both risks and consequences of disaster is the disaster management, which includes prevention and mitigation, preparedness, emergency response and post disaster recovery (i. e. rehabilitation and reconstruction). The Government of Bangladesh (GOB) is convinced that disasters costing innumerable lives and millions of dollars to the national economy can be alleviated with preparedness and preventive measures such as hazard and risk analysis, land use zoning, building codes, disaster preparedness training etc. The need for the integration of all efforts to design a total disaster management strategy is now strongly realized at all tiers of the government machinery.

Self-reliance of the community is the keynote for preparedness, response and recovery. This requires community involvement, which is, at present, encouraged for optimum coordination, best utilization of resources and protection of lives and properties against disasters.

Previously mitigation aspect, as part of disaster management, tended to be considered as structural measures for engineering solutions. There is now a growing awareness at government levels that non structural mitigation measures such as community disaster

preparedness, training and public awareness, linked to micro income generating projects need to be given a high priority (National Workshop 1998: 46). The model has three key elements and ensures). A number of fronts have to be tackled simultaneously for proper disaster management and administration of the aspects mentioned above. It is therefore, important for the government to continue its efforts in the following directions.

- I. International help and experts have to be sought to develop appropriate programs for preparedness involving awareness build up, modern communication facilities, enhancement of institutional capacities etc. International forums have to be used by the government as platforms to draw attention of the world community for securing support of the developed countries in the fields of comprehensive disaster management and environmental protection of the country.
- II. A continuous process is required to be pursued by the Government to review the existing disaster management arrangements in the country. In the process based on past experience and present changes, the needful, in phases, has to be done by the government at national level for updating overall disaster management in the country so as to keep pace with time and catch up with appropriate technological advancement.
- III. At field level: as efficient disaster management involves community participation, the government needs to give priority on efforts for increasing awareness of the community, people and households regarding the practical ways of reducing disaster risks and losses. While formulating development programs of the country, the government needs to ensure that the disaster action plans are established in the most disaster prone thanas and unions with the aim to mobilize communities for preparing and protecting themselves, and also for increasing their own

capacities to cope with and recover from disaster without looking for outside help.

In summing up the discussion we can say that disaster governance is a complex issue with no simple and single solution. To make it more successful, it needs coordinating and integrated management from all parties, but not withstanding the advance of technology and communications. It is still difficult to have easy contact between all parties in a given situation.

Chapter-5

The Sidr Experience 2007

The ferocious cyclone that hit Bangladesh on the 15th November, 2007 came to be known as Sidr afterwards. It was one of the fiercest cyclones in the history of Bangladesh that the country has ever met. The word Sidr in Sinhalese language means 'hole' or 'eye'. The names of earlier cyclones could not be found in the record since the practice of naming them was not a standard those days. Met office sources said the names of future cyclones that are likely to form over the Bay of Bengal and the Arabian Sea have already been fixed (*Daily Star* 17 November 2007). Following Sidr, the cyclone *Nargis* has hit Myanmar in mid-2008 and caused heavy lives and properties. The next possible cyclones that are to hit the region will be known as *Abe*, *Khaimle* or *Chapala* and the names were fixed at a meeting of the World Meteorological Organizations (WMO). It is expected, however, that the above cyclones are not necessarily going to hit Bangladesh; they might strike some other countries in the region as well.

5.1 Grounds of cyclone Sidr

Bangladesh faces cyclones and depressions every year during pre-monsoon and post monsoon seasons due to its geographical location. Sometimes more than one strong cyclone hit the country in a year. The cyclones formed on the Bay of Bengal usually hit Bangladesh between April and May and between October and November, during the pre-monsoon and post-monsoon seasons respectively. Weather experts of the Met office say that many of the cyclones hit the country in post monsoon seasons, especially in the month of November. The temperatures of the sea surface needs to be more than 27 degrees Celsius to form a cyclone.

According to Met office sources higher the temperature, greater the probability of a cyclone forming.

During the monsoon season wind streams over the Bay usually have greater force that does not usually allow any cyclonic formation to stay put at a point. But in post and pre monsoon seasons, cyclones formed on the Bay get opportunity to stay put at a point for a much longer period, and gather ferocity from evaporating water of the sea and turn into a 'low' first and then a well marked low and then a depression which turns into a cyclone if it keeps gaining force. When a cyclone gains wind speed of more than 118 mph, weather experts call it a hurricane.

Many scientists and environmentalists perceive that the incidents of cyclones in Bangladesh have some links to global environmental change. In their recent study Neil and Nick maintained that all forms of environmental change are in some sense global or more accurately, universal (Neil & Nick, 2003:19). They believe that global warming is the 'culprit' contributing to the occurrence of recurrent cyclones like Sidr in Bangladesh. When it comes to global warming impacts, Bangladesh is often a focal point because it is a nation of 142 million people living in low lying flood prone river deltas and that makes cyclone Sidr a big, glaring warning signal. In a recent report entitled 'the age of consequences' released by the center for strategic and international studies and the center for a new American security claims that Bangladesh will be threatened by devastating floods and other damage from monsoons caused by rising sea level (Daily Star 20 November 2007). Although, the frequency and intensity of hurricanes are yet to be definitely linked to global warming – the evidence of sea level rise and its impact for Bangladesh, however, is undeniable.

5.2 Wounds by Sidr

The natural disaster Sidr caused huge sufferings to people's life and loss of properties in the coastal areas of Bangladesh. Losses are immense and these are not properly estimated because of inaccessibility to the actual scenario due to damage of roads and transport system. Nevertheless, the major damages are as follows:

1. Damages to shrimp sector

In the aftermath of cyclone Sidr, the country's shrimp or frozen food industry, the second largest foreign exchange earner, fears an estimated loss of Tk250 crore. Shrimp farms in the three southern districts – Bagerhat, Satkhira and Kulna were severely ravaged by Sidr, these are likely to suffer 70% or Tk175 crore could be the estimated loss (The Daily Star 23th November,2007). Firms in this region are well known for their black tiger shrimp, also called *bagda* shrimp locally. The rest of the shrimp farms located in Barguna, Patuakhali, Pirojpur, Madaripur and Gopalganj suffered 30% loss, amounting Tk75 crore, of fresh water shrimp, locally known as *golda*.

2. Damages to Sunderbans

About one fourth of the four lakh plus hectares of forest area of the world heritage site, the Sunderbans, has been damaged by cyclone Sidr. It was found in a primary assessment of the forest department (The Daily Star 20th November,2007). One fourth of the Sunderbans forest area has been damaged by the cyclone; 8% to 10% of the forest has been completely damaged and those trees will never grow, while 15% has been partly damaged, a part of which will re-grow – said a forest official. The southeastern part of the Sunderbans sustained the main wound that provides livelihood for more than two million people.

3. Damages to Education sector

Academic activities of around 10,000 institutions in 30 districts have been seriously disrupted because of the devastating cyclone Sidr, which badly damaged schools, colleges and madrasas and education materials in these areas. According to the disaster control center, 1,335 educational institutes in 30 districts, especially Ageratum, Barguna, Patuakhali, Pirojpur, Bhola, Jhakakathi and Barisal, were completely damaged by Sidr that hit the southern coastal districts.

4. Damages to livestock sector

The country's livestock sector suffered a loss of around Tk 300 crore in the recent cyclone Sidr. According to the department of livestock services, over one lakh cattle and 21.5 lakh poultry birds were killed in the four severely affected districts (The Daily Star 27th November, 2007). The department estimated that infrastructures of over 800 cattle farms and 2000 poultry farms were destroyed in the November cyclone. Besides, over 45 lakh cattle and 2.7 crore poultry birds were affected in the devastating cyclone in 12 south and southwestern districts. A large number of cattle and poultry are feared to have died due to various post-cyclone infectious diseases.

5. Disease scenario

Spread of diarrhea and other water borne diseases and acute water crisis are the two main problems chasing the survivors. Safe drinking water has become a major concern because the powerful cyclone has also damaged the tube wells. Sweet water ponds have become saline as the tidal surge that swept through the area, came from the bay. The tidal wave entered more than 35 kilometers into the mainland.

5.3 Summary of cyclone situation

As of 29 December 2007 the following table shows the different data on Sidr

Table 5: Sidr 2007 at a glance

Damages sector	Quantity
Affected district	30
Most affected district	12
Affected union / pourashava	1950
Affected family	2064026
Affected people	8923259
Fully damaged crops	742826 acre
Partially damaged crops	1730116 acre
Fully damaged household	563877
Partially damaged household	955065
No of death people	3363
No of injured people	55282
No of missing people	871
No of livestock death	1778507
Fully damaged educational institution	4231
Partially damaged educational institution	12723
Fully damaged roads	1714 km
Partially damaged roads	6361 km
Damaged bridges / culverts	1687
Embankment	1875 km
Damaged trees	4065316

Source: Ministry of Disaster Management

5.4 Disaster management in Mirjagong Upazila

Experience suggests that the disaster management both in the pre and post-Sidr situation was far from satisfactory and well managed. The early warning system in the national media like TV and Radio announcement or transmission was duly served, but the local administration in some areas failed to warn the people in time. In a confidential source it was learnt that the Upazila Nirbahi Officer of Mirjagong Upazila of Patuakhali district failed to take any precautionary measure to save the local people. The concerned union parishad chairman also didn't take any measures like microphone broadcasting in the low land areas so that people can take shelter in the cyclone centers.

The post Sidr disaster recovery was not done properly. In the survey conducted by the present researcher in the Sidr hit Mirjagong upazila found that the local people were aggrieved because the government team abandoned the dead bodies, but with the help of local people ex-chairman of Dewli Subidkhali union buried the dead bodies. Moreover relief operations started after 7/8 days of the actual devastation. Besides delay in the relief operation, there was also lack of coordination in the whole process.

Nevertheless, Chief Adviser Dr. Fakruddin Ahmed over and again reiterated on well-coordinated relief and rehabilitation efforts to fulfill the real needs of the cyclone affected people. Despite the instruction of the Chief Adviser, it was clearly revealed that relief operation was stronger in the upazila head quarters, where people received more food; at the same time people in outlying areas were starving. The people living along the road side near the upazila centres of cyclone torn southern districts were in an advantageous situation and were fortunate enough to receive good supply of relief materials. Principal staff officer (PSO) of the Armed Forces Division Lt Gen Masud Uddin Chowdhury told the businessmen during a meeting in Dhaka, 'I have got reports that cyclone victims in some areas

have received large quantities of relief and they are selling the excess materials.' Government officials and businessmen who visited the areas also said relief was being distributed haphazardly due to lack of coordination.

Sekandar Ali, a freedom fighter and among the 250 who were staying at a shelter project in Kathaltola in Morelgong, said that they did not receive any relief materials (*Daily Star* 26 November 2007). Some victims of the Mirjagonj upazila maintained that although there was no shortage in relief goods in the area, people living in remote areas did not receive the due share.

5.5 Relief operations in Mirjagong upazilla

I have surveyed about 100 people in the Sidr hit Mirjagonj Upazila with a questionnaire of 16 questions. The respondents included farmers, primary school teachers, officials and common people. The results are shown in the following figure.

Figure 3: people's choice

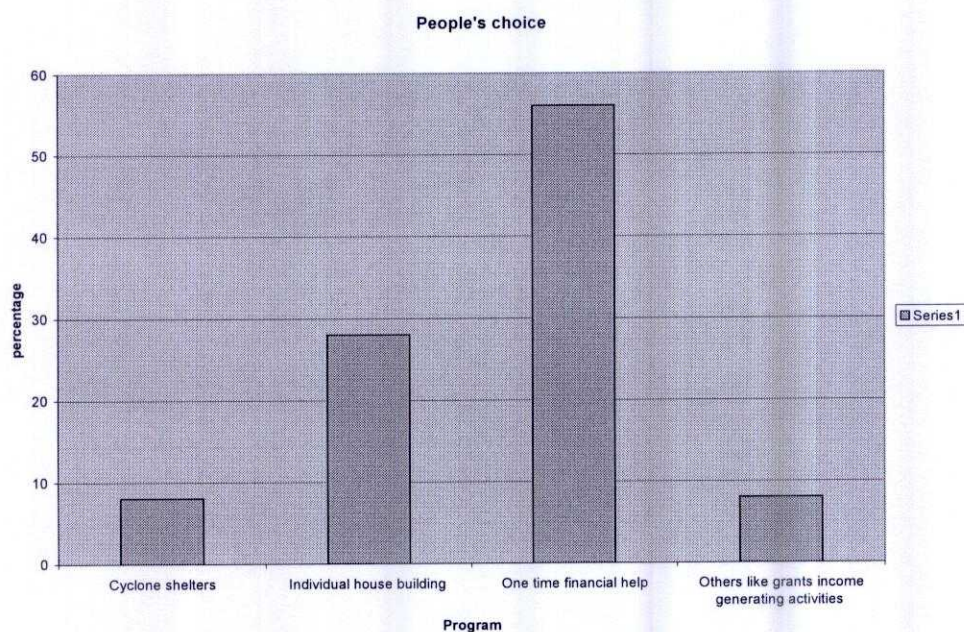


Figure 3 shows that the Sidr victims needed one time financial help to materialize their emergency needs and utilize the money in the optimum ways. The other program like house building and construction of cyclone shelters has also importance too.

Figure 4: Percentage of recovery & treatment

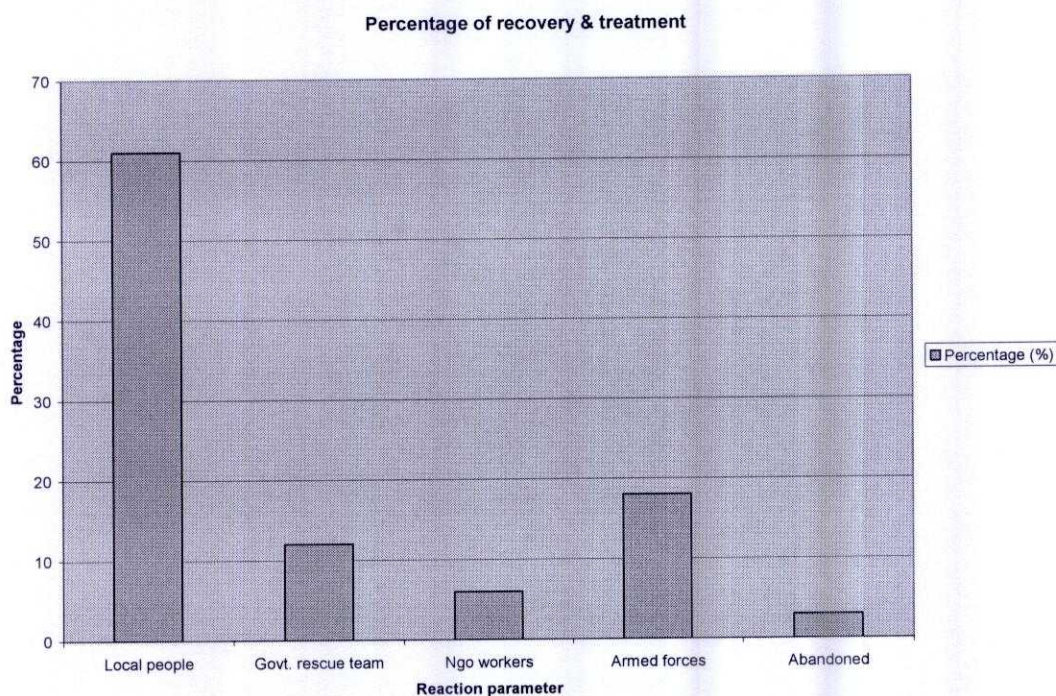


Figure 4 shows that the general people are the best rescuers because they stay in the locality. For this reason they need training and awareness in rescue operation and first aid.

Role of Armed forces in relief distribution

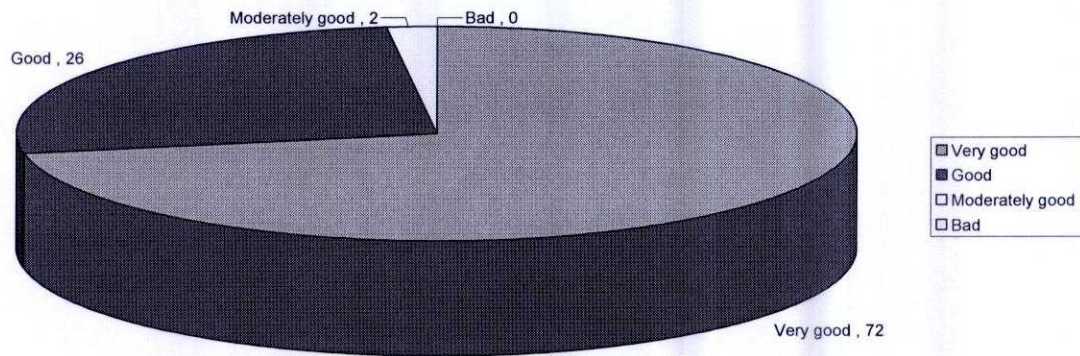


Figure 5 shows that relief operations done by armed forces are more effective and accepted by the local people.

Role of Local Government in relief distribution

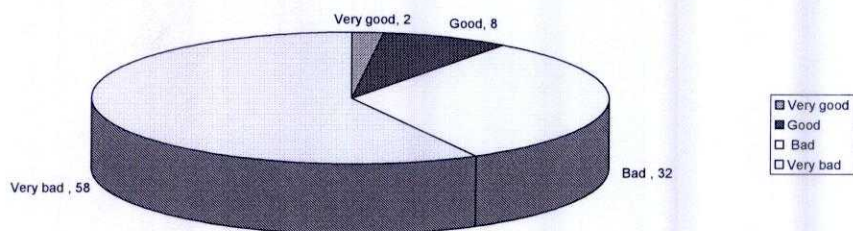


Figure 6 shows that local govt. members due to nepotism, corruption and favoritism, are not accepted by the local people.

Damages at a glance

The following table shows the damages caused by Sidr-2007 in Mirjagonj Upazila.

Table 6: Damages incurred by Sidr in Mirjagong Upazila

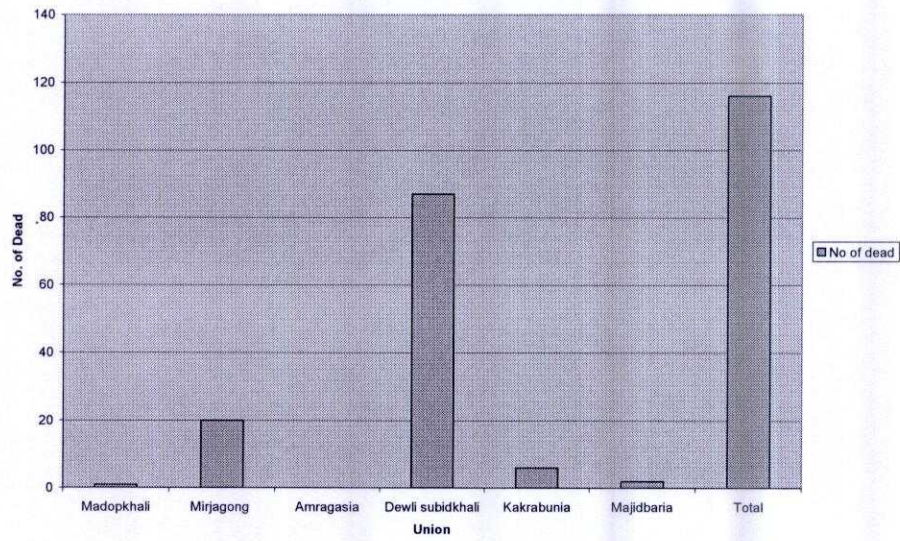
Damaged unions	Damaged (sq km)	Affected	Dead	Wounded	Affected families	Totally damaged houses	Partly damaged houses
Madopkhali	33	20500	1	200	3300	680	2000
Mirjagong	36	24000	20	300	5450	860	3000
Amragasia	35	22000	-	-	3300	780	2000
Dewli subidkhali	28	22500	87	1200	5450	1170	3500
Kakrabunia	23	14500	6	300	2250	800	2000
Majidbaria	24	15000	2	300	2250	700	2000
Total	178	118000	116	2300	22000	5020	14500

Table (cont)

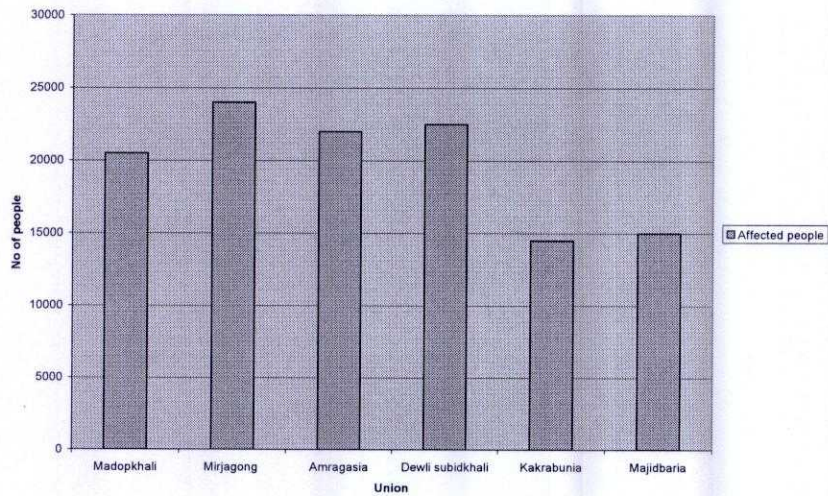
Livestock loss		Loss of crops		Loss to fisheries sector		Loss to education institution		Loss to transport sector		Others
No	Tk (000)	Area (hec)	Tk (000)	Acre	Tk(000)	School/ Madrasha	College	Pancha (Km)	Kancha (Km)	Tk (000)
20250	5400	2040	7960	4	2000	18	-	7	80	31420
20450	7800	2530	10700	4	2000	19	-	6	90	
20250	5400	2000	7400	-	-	15	2	6	60	
30450	8000	2530	11000	5	25000	23	-	10	110	
20300	6000	1299	6785	4	1600	13	1	3	60	
10300	4800	1248	6600	3	1200	12	1	2	60	
Total	38400	11647	49445	20	9300	100	4	34	450	

Source: PIO office, Mirjagonj, Patuakhali.

Union wise No of dead



Unionwise affected people



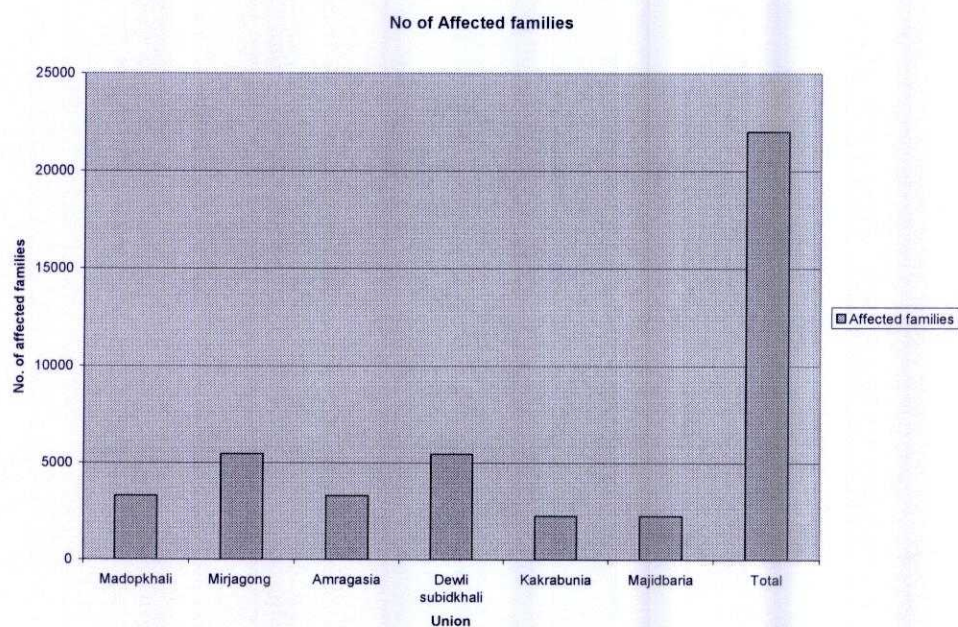
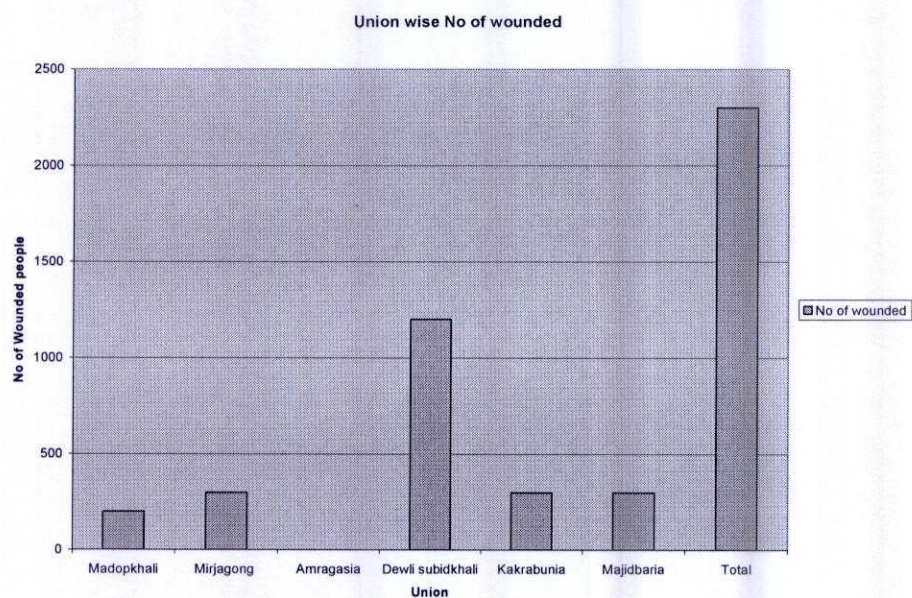
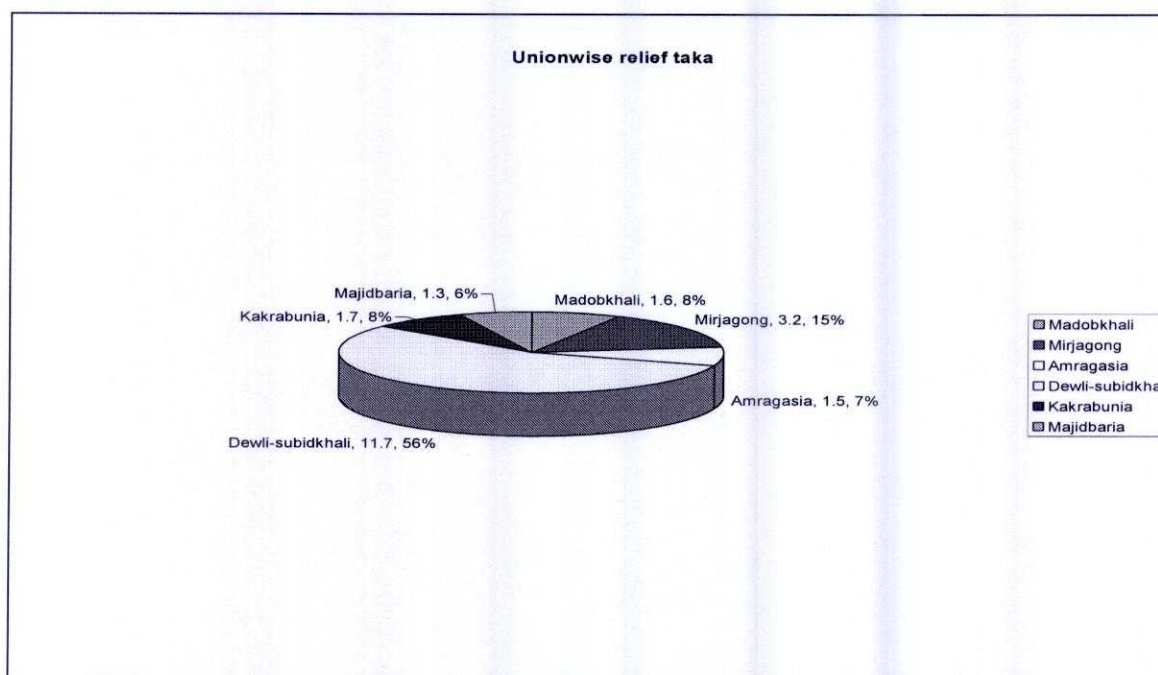
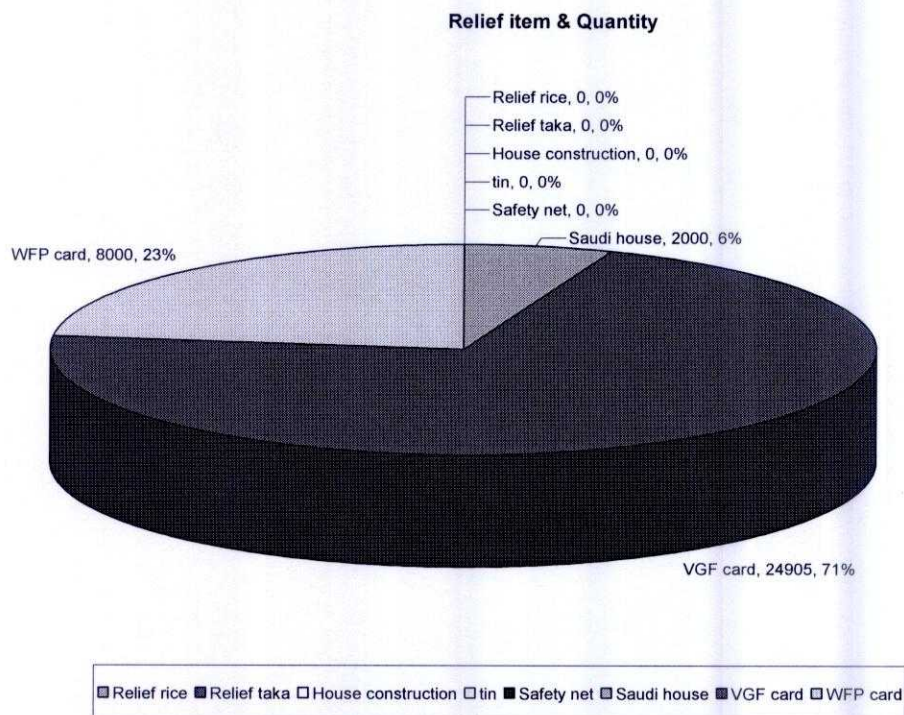
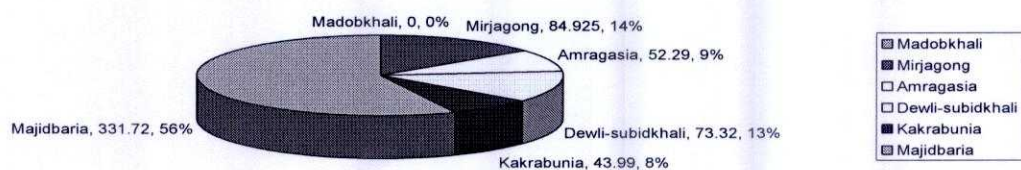


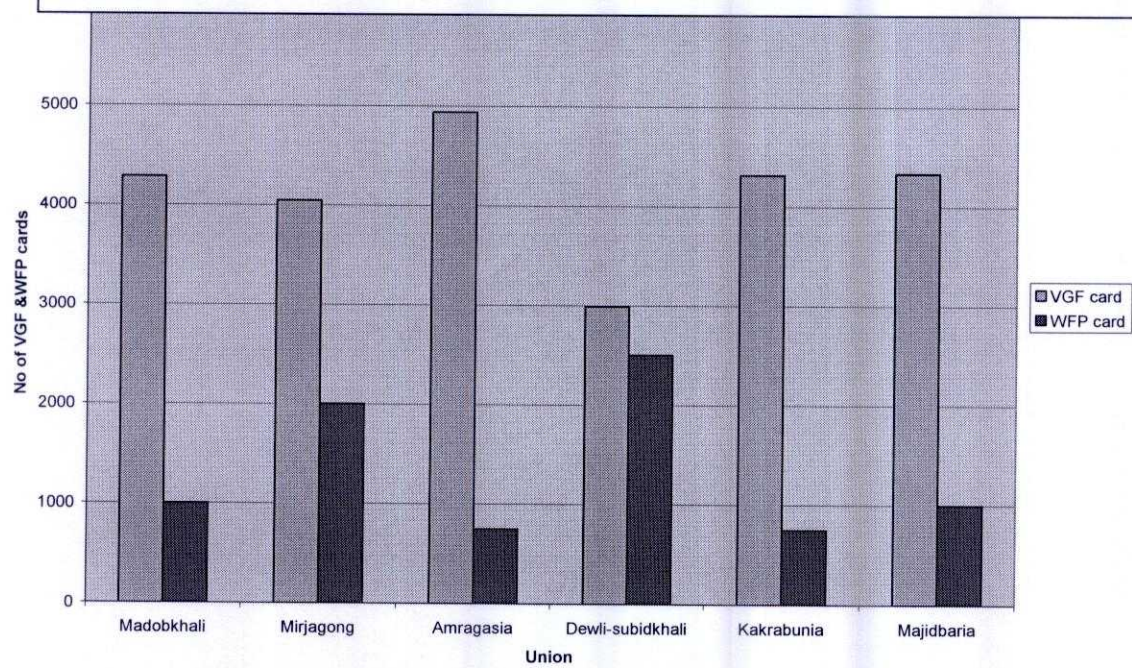
Table 7: Relief distribution activities in Mirjagonj Upazila

ka	28.35	1.60 lac	3.20 lac	1.50 lac	11.70 lac	1.70 lac	1.30 lac	2
	Quantity	Union based	allocation					1
	340 lac	Madopkhali 49.50 lac	Mirjagong 59.0 lac	Amragasia 53.0 lac	Dewli- 74.80 lac	Kakrabunia 55.50 lac	Majidbaria 49.50 lac	3
ction					subidkhali			1
ce	488 MT	47.165 MT	84.925MT	52.290MT	73.320MT	43.990MT	43.030MT	3
	460 ban	71ban	82 ban	76 ban	88 ban	71 ban	71 ban	4

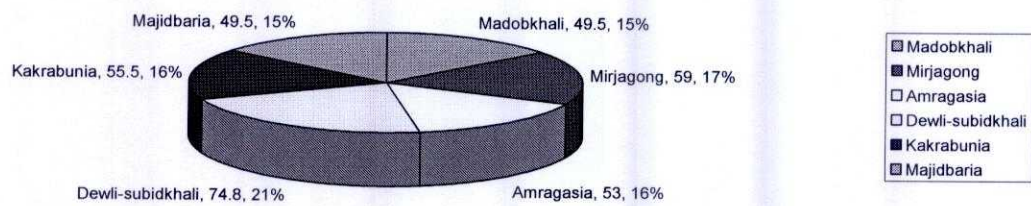
net	24.53 lac	3.53 lac	4.50 lac	4.00 lac	5.00 lac	3.50 lac	3.50 lac	2 l
house	2000	228	471	115	588	298	300	2
rd	24905	4285	4045	4936	2988	4316	4335	2
rd	8000	1000	2000	750	2500	750	1000	8

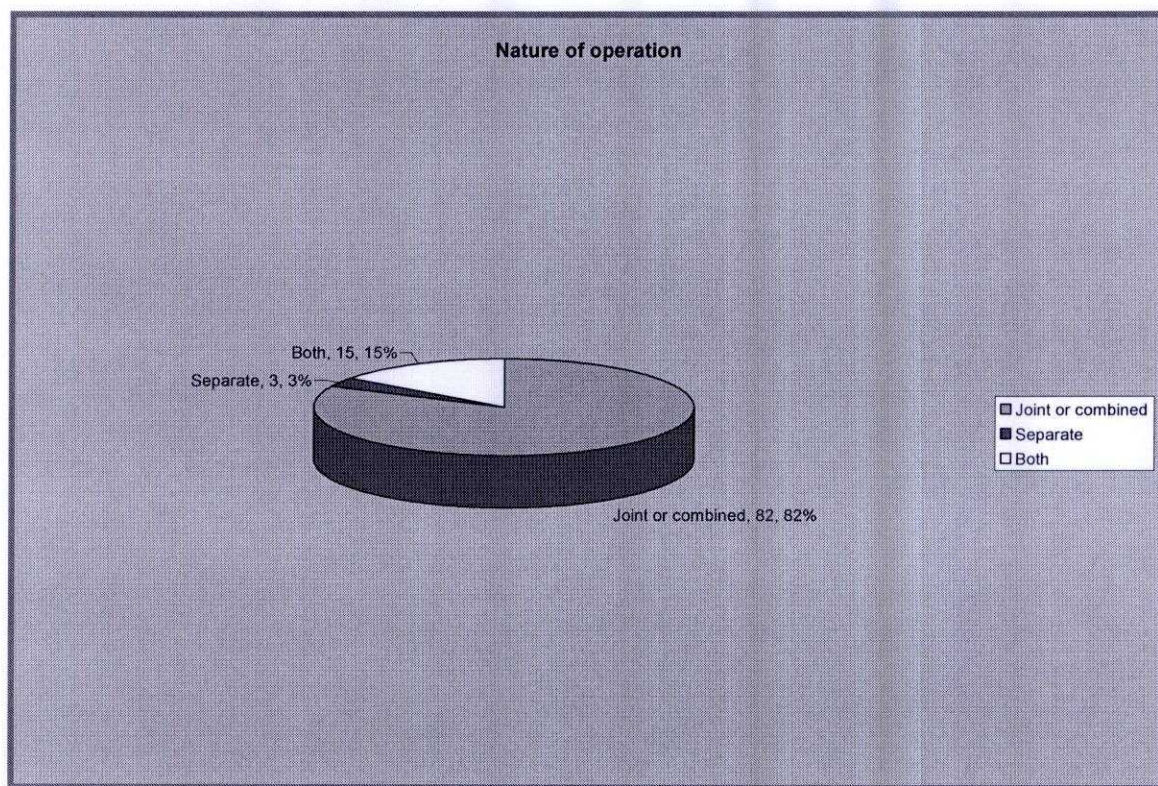
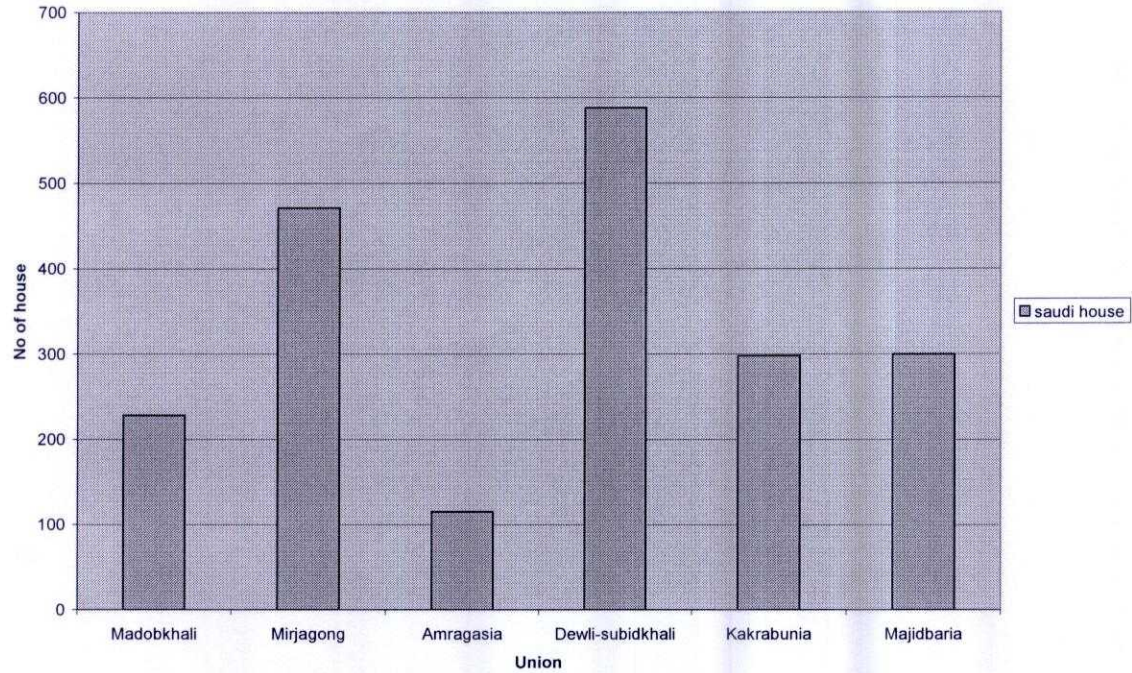






Unionwise house construction





After reviewing the above data, table and Sidr 2007 victims' perception matrix (annex-2) the following major findings were derived.

- ❖ 82% people demands joint operation. It means integrated disaster management is more preferable
- ❖ One time financial help is desirable by the Sidr victims
- ❖ The role of Local govt. members is not praiseworthy in relief operation. Their direct participation should be reduced
- ❖ The armed forces role in relief distribution is praise worthy. The armed force in aid to Civil Administration is the best tool in the context of post disaster management program.
- ❖ The Sidr-2007 was a devastating one. Each and every one was affected directly and indirectly in the coastal area.

Chapter-6

Recommendations and conclusion

6.1 Recommendations

Actually we cannot prevent natural disaster but we can minimize the loss of lives and properties through integrated and proper management of disaster. By disaster management, we understand post disaster activities such as response, recovery, relief and rehabilitation. But the new concept of disaster management has been widened to include prevention, mitigation and preparedness as vital components of disaster management. Through my empirical and local people's views a new term may be included and it is concerted or integrated disaster Governance among the different stakeholders like govt. NGOs, civil societies, media and individuals. If we can integrate all actors in the disaster

recommendations are given below for integrated or concerted disaster

Governance

- ❖ There are many committees that have been constituted to coordinate the disaster management activities. Effectiveness of these committees depends on their proper and regular functioning. It has been observed that the role of DMB in the time of disaster is almost absent. It is therefore, recommended that the number of coordination committees at national level should be reduced as far as possible.
- ❖ Different simulation exercise on various aspect of disaster management like warning system, evacuation plan and communication network, response mechanism, coordination strategies should be conducted on regular basis with officials from concerned govt. departments, national and international organizations, NGOs and civil societies for testing the procedure of coordination and reviewing co-ordinations arrangements in decision making information management, damage/needs assessments.
- ❖ During my survey at the Sidr hit areas, I found initially the local people are the best rescuers but they have no training and no awareness about disaster management. So in the coastal belt districts, awareness program under the direction and guidance of local district administration can be arranged in every year among the local people.
- ❖ The people's view that relief distribution among the victims should be done in a combined way. So integrated approach of distribution program can be set up a committee in every upazila headed by UNO of the concerned upazila. The formation of the committee may be as follows

One member from each working NGO	member
One local elite of each word	member
One educationist from thana HQ	member
PIO	member secretary

In this regard a permanent godown must be set up at the upazila headquarters. The govt. must allocate some money in every fiscal year. No relief distribution both govt. and private without the approval of the integrated committee will be done. Every year the district administration will arrange a workshop to aware the people of the coastal areas.

- ❖ At present there is no coordination committee in the city corporation and pourashava areas. It is necessary to constitute disaster management coordination committees for city corporation and pourashava area.
- ❖ To improve and implement the disaster management system throughout the country for improved recording and reporting of disaster a data processing and storage capability of MIS through computer (with e-mail facilities) may be established at national and district levels.
- ❖ Personnel engaged in disaster management and officials may be properly trained to handle the related issues.
- ❖ For planning and actual implementation during disaster situation, a clear cut demarcation of duties and responsibilities is to be declared
- ❖ Inter coordination among various service departments dealing with relief, rehabilitation, development as well as different branches of the same organization should be intensified for efficient policy implementation

coastal districts

- ❖ More and more embankments in the coastal area be constructed
- ❖ A massive afforestation program be carried out throughout the country, especially at the coastal belts
- ❖ The network of cyclone preparedness program be extended in more upazilas prone to cyclone
- ❖ The existing cyclone warning signal be modified and simplified and the modified signal is introduced at the earliest. Before introduction of the signaling systems, public be educated about the contents and implications of the new signaling systems with proper publicity activities
- ❖ More and more cyclone- cum flood shelters be constructed at the vulnerable areas of the country
- ❖ Community disaster preparedness and community vulnerability reduction as a part of integrated rural development be given priority.

6.2 Conclusion

In wrapping up the whole discussion we can say that almost the entire coastal belt of Bangladesh is exposed to the potential danger of cyclone followed by storm surges. The country has also vast flood plains where flooding occurs annually during southwest monsoon from June to September. To alleviate flooding embankments have been constructed along certain river reaches as structural preparedness measures. Similarly to cope with cyclones, for eventual evacuation of people from risk areas, cyclone shelters were constructed. As comprehensive control of natural hazards is not possible, the GOB have been continuously making endeavor to make disaster counter measures under the total

mitigating sufferings of the people.

Nevertheless, organizations managing disasters need high degree of coordination because the main function of any disaster governance lies with the high degree of uncertainty of the related tasks. Investment on activities related to disaster reduction such as flood control, building cyclone shelters, distributing relief and rehabilitation may be increased manifold; but due to lack of coordination and absence of integrated disaster governance the overall losses would continue to rise. To arrest the trend, the importance of coordination is vital and the process alone can help ensure integrating the objectives and activities of separate work units and realize the minimization of losses effectively. The extent of the need for coordination depends on the nature and communication requirement of the tasks performed and the degree of interdependence of the various units performing them.

In line with the Neo-classical Management model a 'task force' could be created with officials and humanitarian aid workers to pursue long term programs. This task force would be responsible for planning of relief, rehabilitation, reconstruction and development program. This will act as a permanent coordinating mechanism to ensure the services in order to guarantee a minimum coherence and coordination of relief and rehabilitation activities and also a vehicle for smooth transition towards development actions. Similarly, the model could be applied in coordination and integrated approach at national, regional, local and at organizational levels.

While the need for effective relief management and coordination is usually well understood in the context of Bangladesh, it is unusual for a central agency to have overall responsibility for providing leadership and coordination of the wide diversity of mitigation activities. For example,

how the laws will be enforced, how they will be taught to engineers, architects and construction workers, or what will be the source of finance to pay for the additional costs they may entail. In order to integrate diverse mitigation measures, a coordinating agency need to be established which should be independent of any of the existing ministries that may implement mitigation measures.

Some countries have found it expedient to place the coordination in the President's or Prime Minister's office. Participatory frameworks should permit those affected by mitigation measure to express their concerns and to influence divisions. It is essential to have effective leadership, which is recognized and accepted by those involved in applying mitigation policies. Without direction and application of skills at the appropriate levels, implementation will be slow and patchy and scare resources may be wasted on effective measures or duplication of efforts.

Over the past 36 years, Bangladesh has developed a considerable experience and expertise in managing wide range of disasters, cyclones and floods having been the primary focus of attention, while structures and procedures for disaster management exist, the real challenge lies in energizing and rendering these truly operational at all levels. In that case, integrated approach can help minimize the loss of property and lives and the post disaster governance needs coordination among all actors. The actors include national, international donor agencies, NGOs and civil societies, local elites. If we can integrate all actors in a systematic and concerted manner taking representatives from all concerns, it is thought that the disaster management would be very fruitful. Moreover, basic principles of disaster mitigation may also be included in the curriculum of ordinary school education, which would be

A comparison with the disaster mechanisms in some of the Asian countries as mentioned at chapter-2 of this thesis, it would reveal that Bangladesh is not in a adverse position in many respects. The handling of 1997 cyclones and flood of 1998 have been widely acclaimed home and abroad. Seeing the successful handling of 1998 flood, representative of Japanese Land Agency visited Bangladesh and made detailed study of our systems to improve their disaster management. Similarly, the Government of India also expressed desire to send a delegation to study Bangladesh disaster governance systems. In addition many international disaster organizations have praised the achievements of Bangladesh in containing the loss of human lives in 1998 flood by managing the situation efficiently and effectively. The empirical evidence of the local people of Sidr 2007 shows that if one-way disaster management is done focusing local administration as the top and coordinated efforts of all actors, the damages may reduce drastically. Since cyclones like Sidr and Nargis are inevitable, taking defensive measures can protect the ordinary people. Bangladesh is a resilient country and Bangladeshis are courageous people. It is the country whose people seek innovative solutions to coping with a continual sequence of natural disasters. They recognize that building of a greater self-reliance and awareness must be a cornerstone of disaster preparedness policy and strategy for the future. The people of Sidr hit areas thought that integrated disaster governance is the crying need of the day. The sooner the government understands this; the better will be future in maintaining disasters and coping with natural disasters effectively and efficiently. Bangladesh's geographical location and vulnerability demands that the world must give top priority to climate change or else, sustainable development would remain a far cry in the country.

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Appendix - A: National Council / Committees

i	Prime Minister	chairman
ii	Minister, Ministry of Water Resources	Member
iii	Minister, Ministry of Finance	Member
iv	Minister, Ministry of Local Govt. Rural Development and cooperatives	Member
v	Minister, Ministry of Communication	Member
Vi	Minister, Ministry of Health and Family Welfare	Member
Vii	Minister, Ministry of Home Affairs	Member
Viii	Minister, Ministry of Food	Member
Ix	Minister, Ministry of Disaster Management and Relief	Member
X	Minister, Ministry of Agriculture	Member
Xi	Minister, Ministry of Shipping	Member
Xii	Chief of Army staff	Member
Xiii	Chief of Navy	Member
xiv	Chief of Air force	Member
Xv	Cabinet Secretary	Member
Xvi	Principal secretary to the prime minister	Member
Xvii	Secretary, Ministry of Agriculture	Member
Xviii	Secretary, Finance division	Member

Xx	Secretary, Ministry of Home Affairs	Member
Xxi	Secretary, Ministry of Defense	Member
Xxii	Secretary, Local govt. division	Member
Xxiii	Secretary, Roads and Highways Division	Member
Xxiv	Secretary, Ministry of Shipping	Member
Xxv	Secretary, Jamuna Bridge Division	Member
Xxvi	Secretary, Ministry of Water Resources	Member
Xxvii	Secretary, Ministry of Food	Member
Xxviii	Secretary, Ministry of Disaster Management and Relief	Member
Xxix	Member (socio-economic infrastructure), Planning Commission	Member
xxx	Principal Staff Officer, Armed Forces Division	Member

Source: SOD, Disaster Management Bureau (1999)

Appendix- B: District Disaster Management Committee

Deputy Commissioner	Chairman
Officials of concerned department at district level	member
District executive officers	Member
Women's representative	Member
District representative of Bangladesh of Red Crescent Society	Member
Representative of cyclone preparedness programmes (CPP)	Member
NGO's representative	Member

All the MPs of the District will be advisers to the Committee.

Source: SOD, Disaster Management Bureau (1999)

Appendix- C: Union Disaster Committee

Union parishad chairman	Chairman
UP members	Member
Teacher's representative	Member
Govt. officials/employees at union level specially health workers	Member
Union leader of union cyclone preparedness programs of unions in cyclone prone areas	Member
Representative of Bangladesh Red Crescent Society	Member
Representative of local NGOs or societies	Member
At least two women's representatives	Member
UP Secretary	Member secretary

Source: SOD, Disaster Management Bureau (1999)

**An evaluation of disaster management of Bangladesh,
A post SIDR operation program.**

Questionnaire

[**Note:** the present study is an attempt to conduct a research on the relief operation in SIDR hit areas of the coastal district. Collected data will be used for research purpose only. Please help the study by your practical experience. Please put tick mark or write 'yes' or 'no' where necessary.]

Name:

Husband / father's name:

male/ female

Present address:

Permanent address: vill-

p.s.

Dist.-

Occupation -

qualification-

age-

During SIDR-2007 where you were staying

Distant location

Give your experience about SIDR

How the affected or wounded people were recovered and got medical treatment.

By the local people

Govt. rescue team

NGO rescue workers

Army / navy / armed forces

Abandoned

Is there any warning from the govt. or others like TV, radio or local micking?

Yes

No

After how many days did you get relief?

How the relief operations were done?

Is there any undue interference or nepotism in the relief operation?

Yes

No

What was the role of the local govt. members in the relief operations?

Very good

Good

Bad

Very bad

Who did or managed relief operations well

Local govt.

Upazilla administration

Others (NGOs)

What type of relief operation do you prefer?

Joint or combined

Separate

Mixed or both

Was the relief operation adequate?

Yes

Do you have any special suggestion for relief operation?

Evaluate the army, navy or armed forces operation

Very good

Good

Moderately good

Bad

Very bad

Rank your preference about relief operation (1 to 10)

Jointly (govt. + local govt. + NGOs)-

Individually

Govt.+ army

Army only

Local govt. only

Have you got any help / relief from any source?

Yes

No

ne shelters

Individual house building program

One time financial help

Others like grants income generating activities

Signature:
for cooperation.

Thank you

Appendix -E: Respondent reaction matrix

Table-1

Questions	Reply/reaction parameter	Percentage (%)	Comments
How the affected or wounded people were recovered and got medical treatment	Local people	61	Local people are the main rescuers. So local people should be trained in this regard.
	Govt. rescue team	12	
	Ngo workers	6	
	Armed forces	18	
	Abandoned	3	
Is there any warning from Govt. other than TV, radio?	Yes	1	Local govt. /administration was not properly active to some
	No	99	

			areas.
How relief operations were done	Combined	12	Lack of coordination in relief distribution was found or was there.
	Haphazardly	88	
Is there any undue interference or nepotism in the relief operation?	Yes	78	Relief distribution was not properly done.
	No	22	
What was the role of the local govt. members in the relief operation and rehabilitation program?	Very good	2	Local govt. members are not fair
	Good	8	
	Bad	32	
	Very bad	58	
Who managed post disaster operation well	Local govt.	26	
	Upazilla administration	44	
	Others(NGOs, local individuals)	30	
What type of operations do you prefer?	Joint or combined	82	Joint or combined operation ensures better outcomes.
	Separate	3	
	Both	15	
Were the relief materials adequate?	Yes	96	Relief goods were sufficient
	No	4	

Evaluate the armed forces operation	Very good	72	Armed forces in aid to civil administration in disaster management bring better results.
	Good	26	
	Moderately good	2	
	Bad	0	
Give your preferences of the following program	Cyclone shelters	8	One time financial help is needed.
	Individual house building	28	
	One time financial help	56	
	Others like grants income generating activities	8	